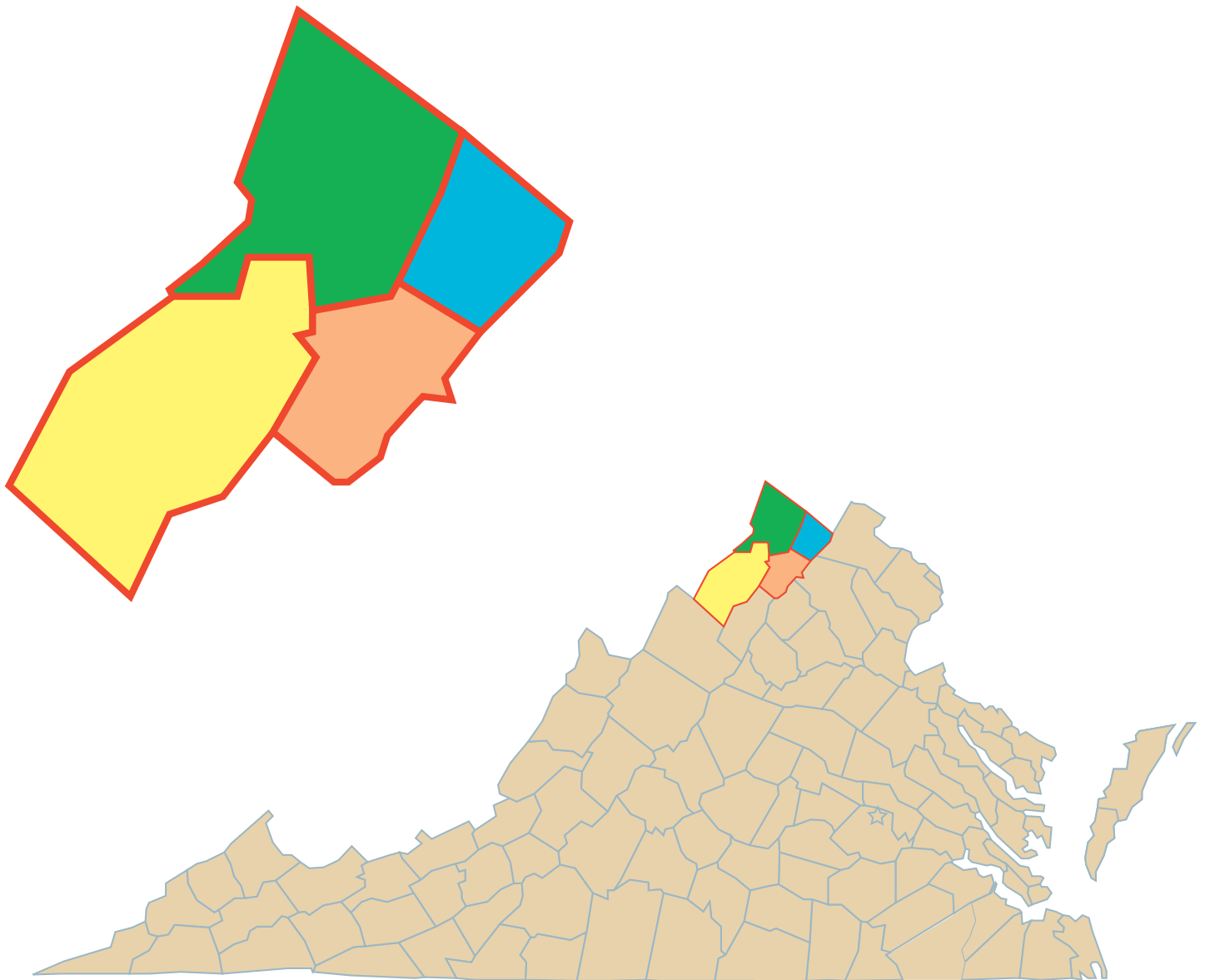
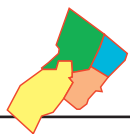


Community Profile of WIA V

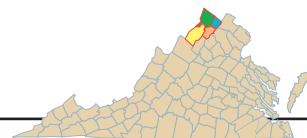
Clarke County • Frederick County • Shenandoah County • Warren County •
City of Winchester





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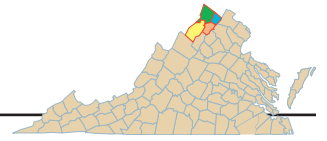
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Executive Summary

This report provides a demographic, economic, and educational profile of Workforce Investment Area V (WIA V), Northern Shenandoah Valley. The purpose of these profiles is to assist on-going strategic planning efforts by providing a solid, data-driven, foundation for strategic decision-making. The primary findings from this report are:

- Between 2000 and 2010, WIA V will experience a major increase in its 55 and over population. The net result of this trend will be a significant “graying” of the overall population.
- One implication of this trend is that younger entry-level workers will be in short supply.
- WIA V is experiencing, and will likely continue to experience, a shift away from employment in Manufacturing and toward employment in Services and Retail Trade.
- One implication of this shift is that the Service sector – specifically, health care and education – is expected to account for much of the demand for trained workers between 1998 and 2008.
- Another implication is likely downward pressure on wages. Whereas Manufacturing comprised the 7th highest wage sector in the local economy, Retail Trade ranks 18th and Education 14th.

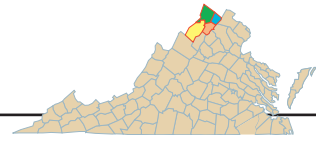




I. Introduction

This report provides a community profile of Workforce Investment Area V (WIA V). It was produced by the Virginia Employment Commission, with assistance from the Virginia Community College System and the Virginia Economic Development Partnership, at the request of the Special Advisor to the Governor for Workforce Development. It is intended to assist on-going strategic planning efforts within the Workforce Investment Boards by providing a solid, data-driven, foundation for strategic decision-making.

The report is divided into four major sections. The first contains a profile of regional demographic characteristics and trends, the second supplies similar information for the regional economy, and the third provides a profile of regional education characteristics and projected demands for training and skills. These are followed by a summary and conclusion section.

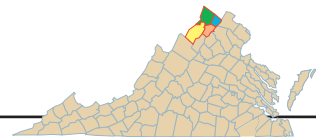




II. Demographic Profile

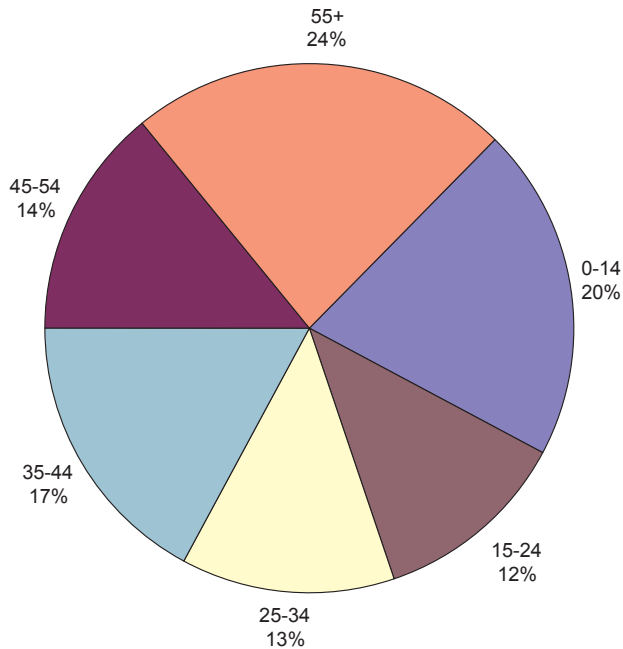
Population demographics are the single most important factor affecting WIA V's future labor force. Some key features of the area's population are as follows:

- Tends to be slightly older. Where statewide individuals who are 55 and older comprise 20 percent of the population, in WIA V they comprise 24 percent of the population.
- Smaller proportion of minorities. Where statewide minorities comprise 28 percent of the overall population, in WIA V they comprise seven percent of the population.
- Projected to increase by 25,795 persons (or 15.9 percent) between 2000 and 2010. The largest increase is expected in Frederick County (13,091), followed by Warren (4,716), and Shenandoah (4,025) counties.
- Smaller proportion of individuals who "speak English less than well". Where statewide the proportion of individuals five and older who speak English less than well is 2.2 percent, in WIA V it is 1.3 percent.
- The city of Winchester draws the largest number of in-commuters (16,075) of any locality within WIA V, followed by Frederick County (11,634). A large proportion of Frederick County's in-commuters come from West Virginia. On the whole, WIA V is a net exporter of workers with 14,708 individuals commuting into the area for work, while 19,330 of the area's residents commute to localities outside of WIA V for work.

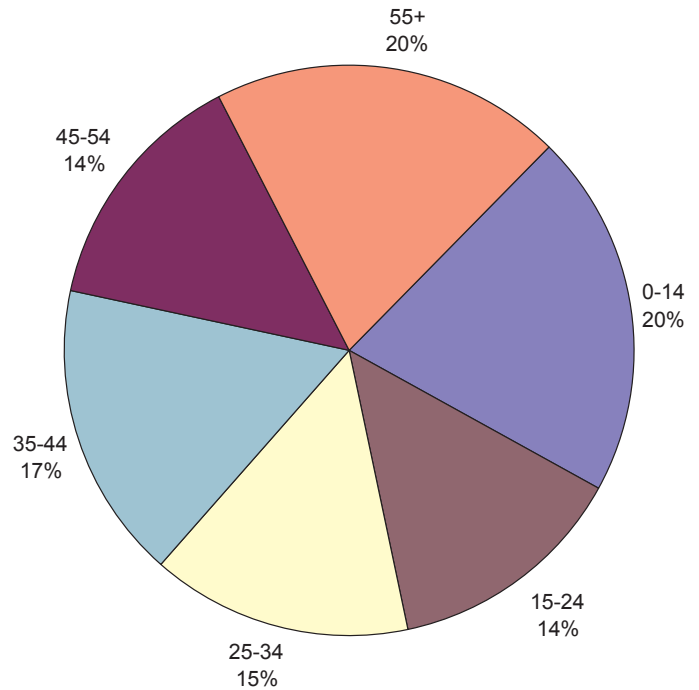


Population by Age Cohort

WIA V



Virginia



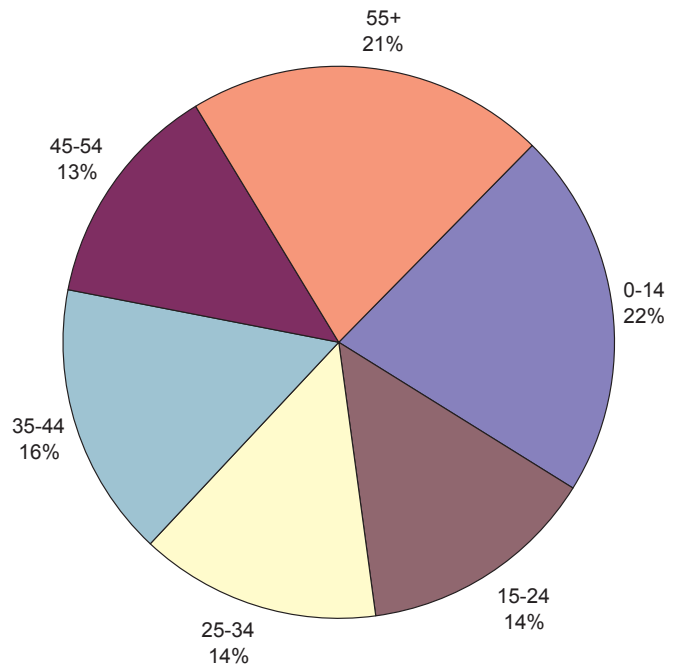
WIA V

0-14	33,070
15-24	19,206
25-34	21,135
35-44	27,772
45-54	22,971
55+	37,951
Total	162,105

Virginia

0-14	1,453,452
15-24	963,469
25-34	1,036,911
35-44	1,200,950
45-54	999,548
55+	1,424,169
Total	7,078,494

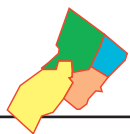
United States



United States

0-14	60,253,375
15-24	39,183,890
25-34	39,891,724
35-44	45,148,527
45-54	37,677,952
55+	59,266,437
Total	281,421,906

Subparts may not add to total due to rounding.
Source: 2000 Census.

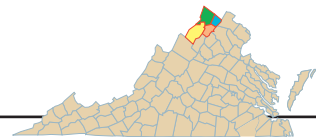


Population by Race/Ethnicity

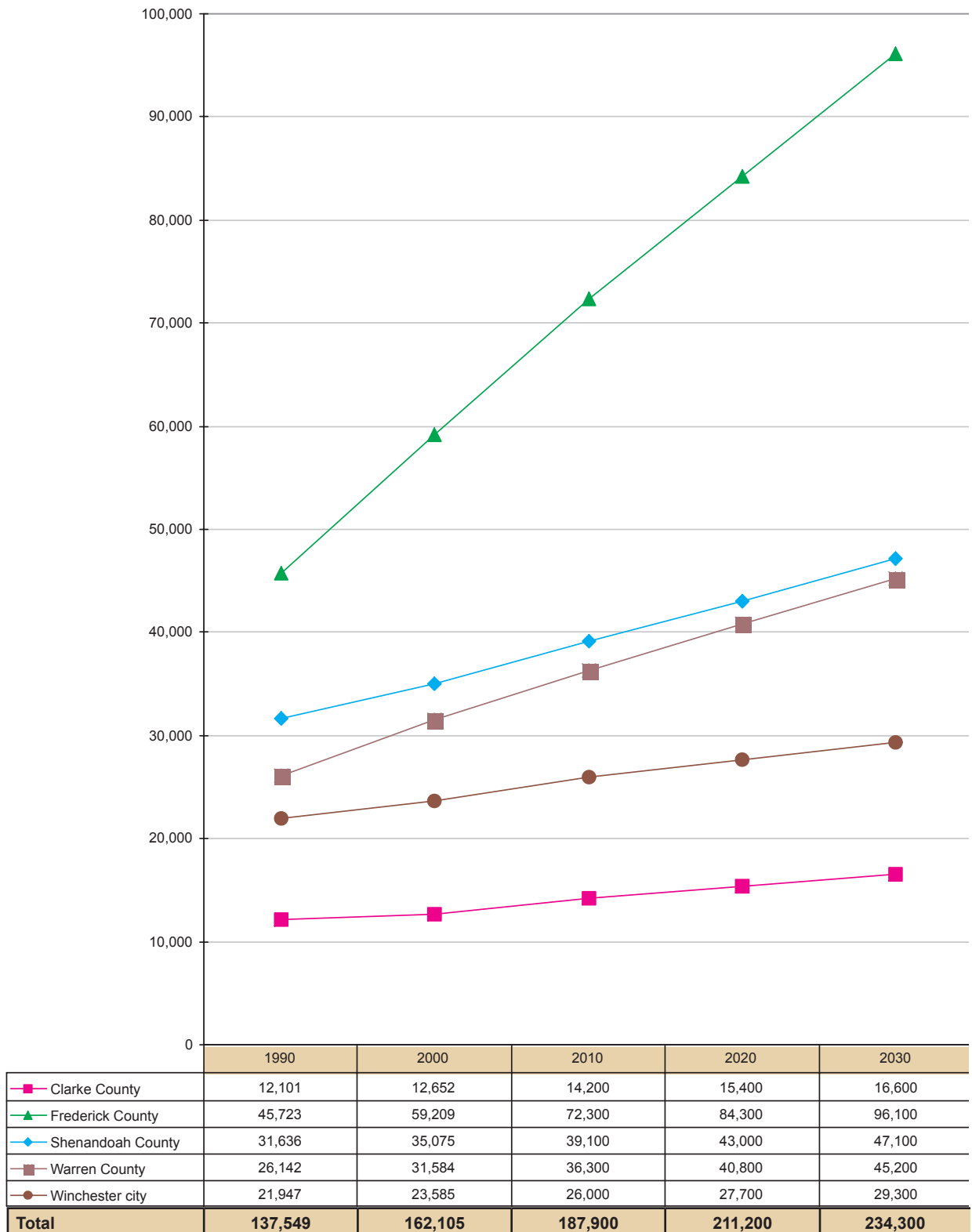
WIA V		
Total Population	162,105	100.0%
Race		
White	149,940	92.5%
Black or African American	6,810	4.2%
American Indian and Alaska Native	318	0.2%
Asian	1,083	0.7%
Native Hawaiian and Other Pacific Islander	35	—
Other and Multi-Race	3,919	2.4%
Ethnicity		
Hispanic or Latino (of any race)	4,404	2.7%

Virginia		
Total Population	7,078,515	100.0%
Race		
White	5,120,110	72.3%
Black or African American	1,390,293	19.6%
American Indian and Alaska Native	21,172	0.3%
Asian	261,025	3.7%
Native Hawaiian and Other Pacific Islander	3,946	0.1%
Other and Multi-Race	281,969	4.0%
Ethnicity		
Hispanic or Latino (of any race)	329,540	4.7%

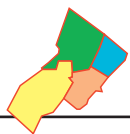
United States		
Total population	281,421,906	100.0%
Race		
One race	274,595,678	97.6%
White	211,460,626	75.1%
Black or African American	34,658,190	12.3%
American Indian and Alaska Native	2,475,956	0.9%
Asian	10,242,998	3.6%
Native Hawaiian and Other Pacific Islander	398,835	0.1%
Other and Multi-Race	22,185,301	7.9%
Ethnicity		
Hispanic or Latino (of any race)	35,305,818	12.5%



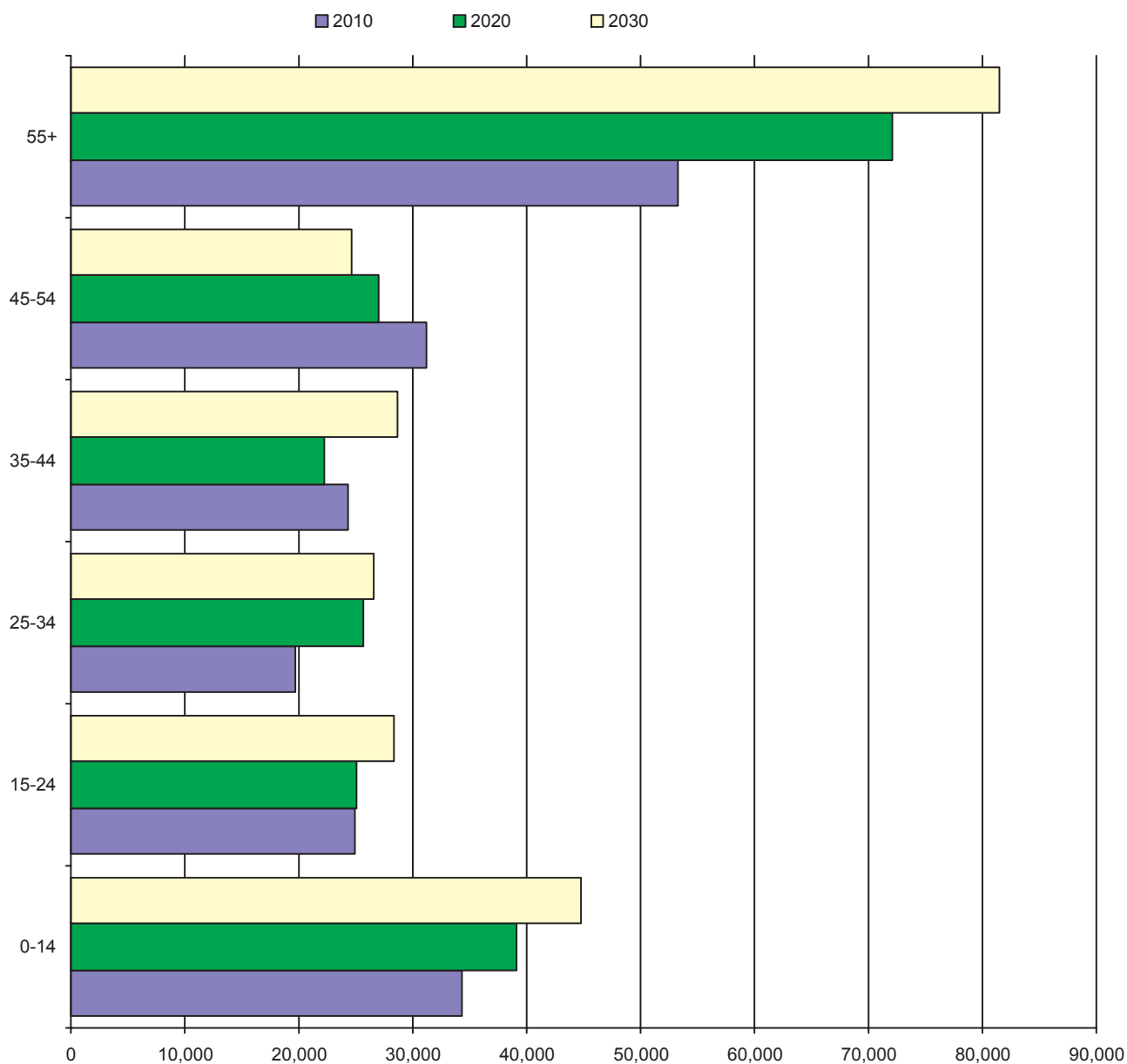
Population Change



Data for 2010 - 2030 are projections. Subparts may not add to total due to rounding.
Source: Virginia Employment Commission, 08/03, U.S. Census Bureau.



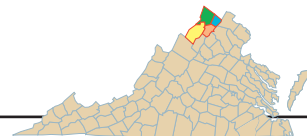
Population Projections by Age Cohort



	2010	2020	2030
0-14	34,349	39,103	44,702
15-24	24,882	25,010	28,350
25-34	19,773	25,688	26,536
35-44	24,334	22,254	28,602
45-54	31,248	27,040	24,589
55+	53,353	72,105	81,521
Total	187,900	211,200	234,300

Subparts may not add to total due to rounding.

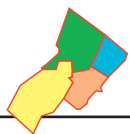
Source: Virginia Employment Commission.



English Language Skills

(Age 5 and over)

WIA V		
	Total	Speak English less than well
Clarke County	12,008	45
Frederick County	55,370	474
Shenandoah County	33,059	555
Warren County	29,480	145
Winchester city	22,146	781
WIA V	152,063	2,000
Virginia	6,619,266	143,865
<i>Percent of Individuals who speak English less than well</i>		
Virginia	2.17%	
WIA V	1.32%	



Commuting Patterns¹

	In-Commute (To)									Total From County/City:		
	Clarke	Frederick	Shenandoah	Warren	Winchester	Total From County/ City To WIA V	Other VA Localities	West Virginia	Other Out of State		Total In State	Total Out of State
Out-Commute (From)	Clarke	630	28	85	728	1,471	2,360	67	244	4,142	3,831	311
	Frederick	995		530	979	11,948	4,419	662	595	17,624	16,367	1,257
	Shenandoah	97	1,232		680	2,875	2,956	62	192	6,085	5,831	254
	Warren	205	948	550		2,327	5,534	30	637	8,528	7,861	667
	Winchester	510	3,316	172	284	4,282	1,177	185	210	5,854	5,459	395
Total To County/City From WIA V	1,807	6,126	1,280	2,028	11,662							
Other VA Localities	223	715	1,406	1,279	726							
West Virginia	820	4,538	305	367	3,424							
Other Out of State	43	255	30	314	263							
Total to County/ City:	2,893	11,634	3,021	3,988	16,075							
Total In State	2,030	6,841	2,686	3,307	12,388							
Total Out of State	863	4,793	335	681	3,687							

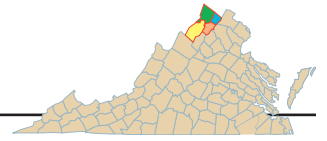
<u>Total WIA Commuting²</u>	
Total Commuting To WIA:	14,708
Total Commuting From WIA:	19,330

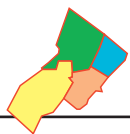
Source: "In-Commuting Patterns" and "Out-Commuting Patterns," 2000 Census data, Virginia Employment Commission, http://www.vec.state.va.us/vecportal/lbrmkt/lmi_menu.cfm

1. Empty cells within the table indicate that the area's commuting represents less than .2% of total commuting or may be zero.
2. Total Commuting to/from WIA= Other VA Localities + Out of State

Example of how to use the Commuting Patterns table:

"How many of Frederick's residents commute to Clarke County?" On the horizontal or To axis, locate the column labeled Clarke. On the vertical or From axis, locate the row labeled Frederick. The intersection of the row and column, 995, is the number of Frederick's residents that commute to Clarke County.





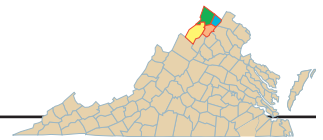
III. Economic Profile

Where population demographics provide information on underlying trends within the labor force, economic data provides more detailed information on the likely demand for specific types of workers. Some key features of WIA V's economy are as follows:

- Unemployment rates are below the statewide average. Starting in 1997, WIA V's unemployment rate has consistently fallen further and further below the statewide average.
- Employment is concentrated in Manufacturing (22.4 percent), Retail Trade (13.7 percent), Government (12.1 percent), and Health Care (10.5 percent).
- Most new hires have been in Services (33.9 percent), Retail Trade (32.3 percent), and Manufacturing (12.0 percent).
- Overall personnel turnover is slightly below the statewide average (12.4 percent vs. 13.2 percent). Personnel turnover tends to be highest in Services (15.9 percent), followed by Retail Trade (15.0 percent) and Agriculture, Forestry, and Fishing (14.9 percent).
- Weekly wages were highest in Management (\$1,317), followed by Utilities (\$991), Federal Government (\$960), Professional/Technical Services (\$716), and Health (\$706).
- Industries with the largest proportion of workers at or near retirement age (55 and above) are Finance, Insurance, and Real Estate (20.1 percent), Mining (20.0 percent), Wholesale Trade (17.8 percent), and Agriculture, Forestry, and Fishing (17.2 percent).
- Employment projections indicate that between 1998 and 2008, most employment growth will occur in Services (24,790 additional jobs) and Retail Trade (8,677 additional jobs). In contrast, Agriculture, Forestry, and Fishing is projected to lose 1,093 jobs.
- Employment projections also indicate that between 1998 and 2008, the biggest growth in occupational employment will be in Secondary School Teachers (1,900 openings), Guards (1,310 openings), Telemarketers (770 openings), Teacher's Aides (670 openings), and Systems Analysts (550 openings). Alternatively, the biggest declines in occupational employment will

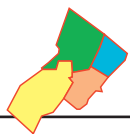
be in Sewing Machine Operators, Private Cleaners and Servants, and Machine Tool Cutting Operators.

- Based on January 2004 Unemployment data, the largest pools of available workers are in the Production, Construction and Extraction, Office and Administrative Support, Transportation and Materials Moving, and Management occupations.



Unemployment Rate Trends



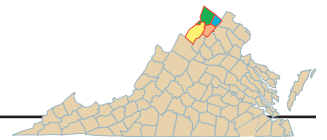


Employers by Size of Establishment

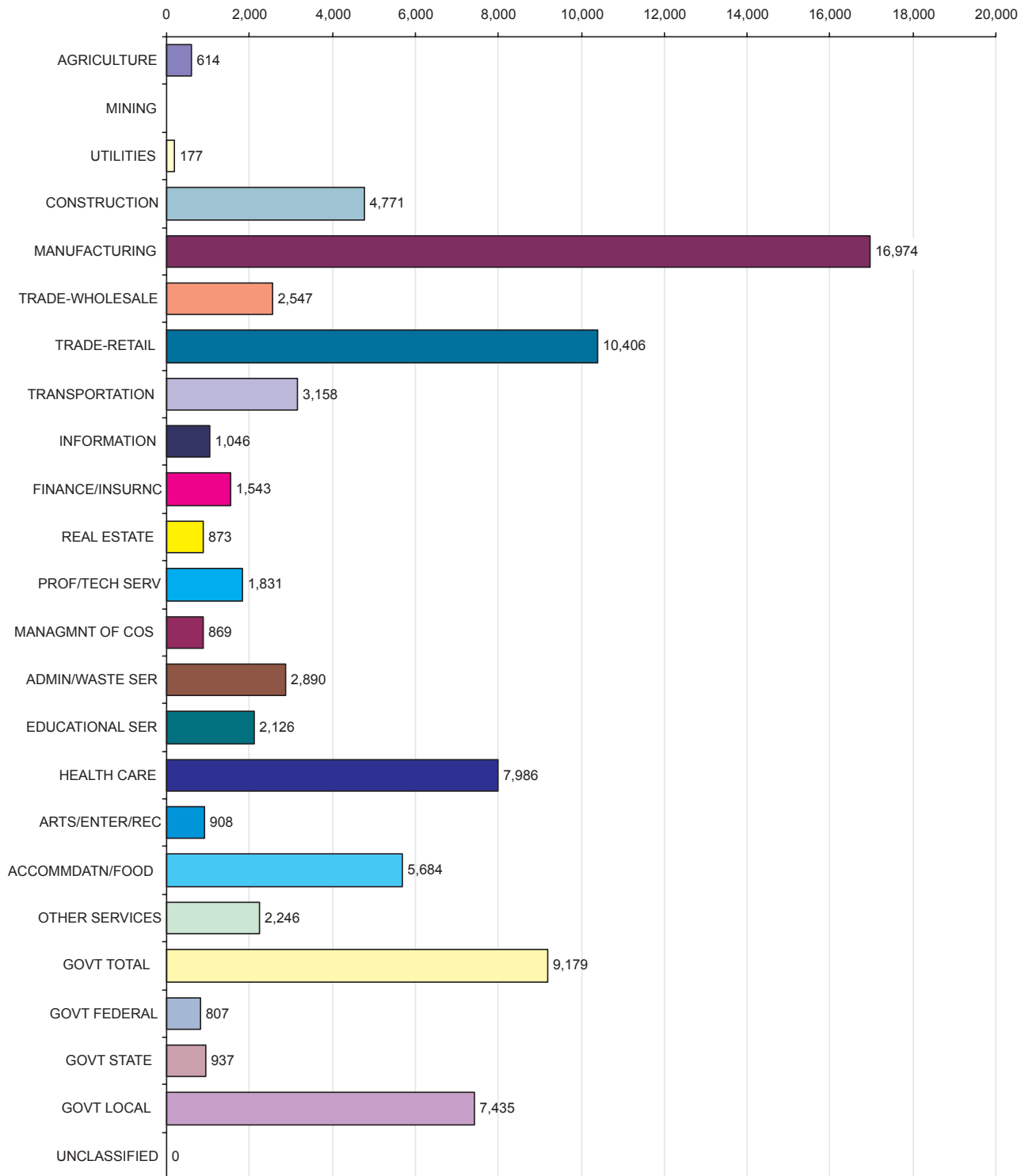
Number of Employees	WIA V	Virginia
0 - 4	2,422	107,195
5 - 9	883	35,763
10 - 19	637	25,141
20 - 49	465	18,074
50 - 99	131	6,136
100 - 249	76	3,388
250 - 499	21	1,029
500 - 999	14	409
1000 +	D	229
TOTAL	4,652	197,364

Employment by Size of Establishment

Number of Employees	WIA V	Virginia
0 - 4	4,434	188,377
5 - 9	5,952	238,634
10 - 19	8,707	340,363
20 - 49	14,127	553,221
50 - 99	8,962	422,392
100 - 249	11,163	503,348
250 - 499	7,357	352,727
500 - 999	9,678	274,493
1000 +	D	543,583
TOTAL	75,472	3,417,138



Employment by Industry

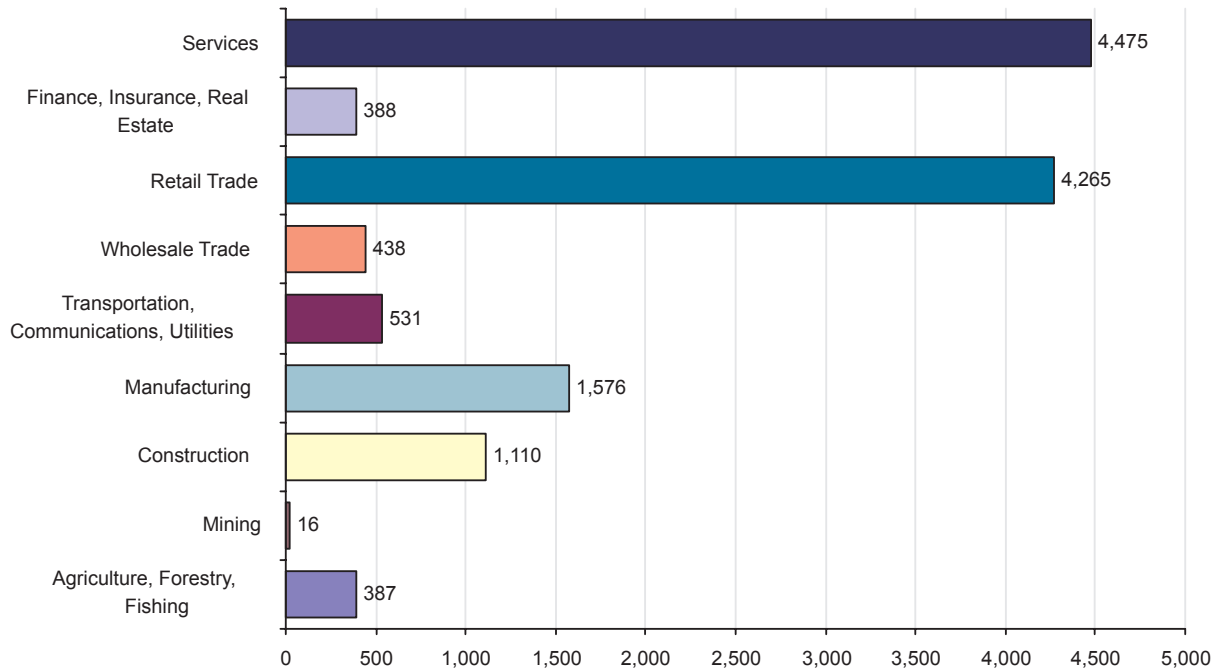


Total: 75,886



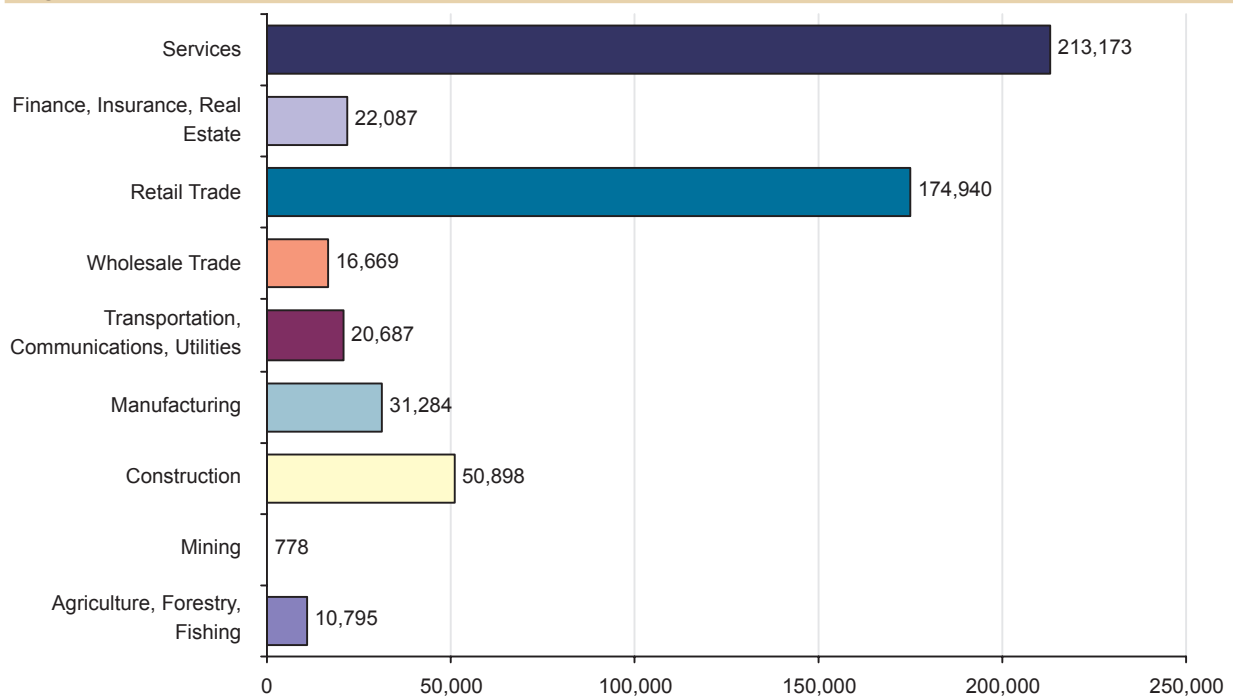
New Hires by Industry

WIA V

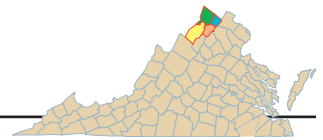


Total: 13,188

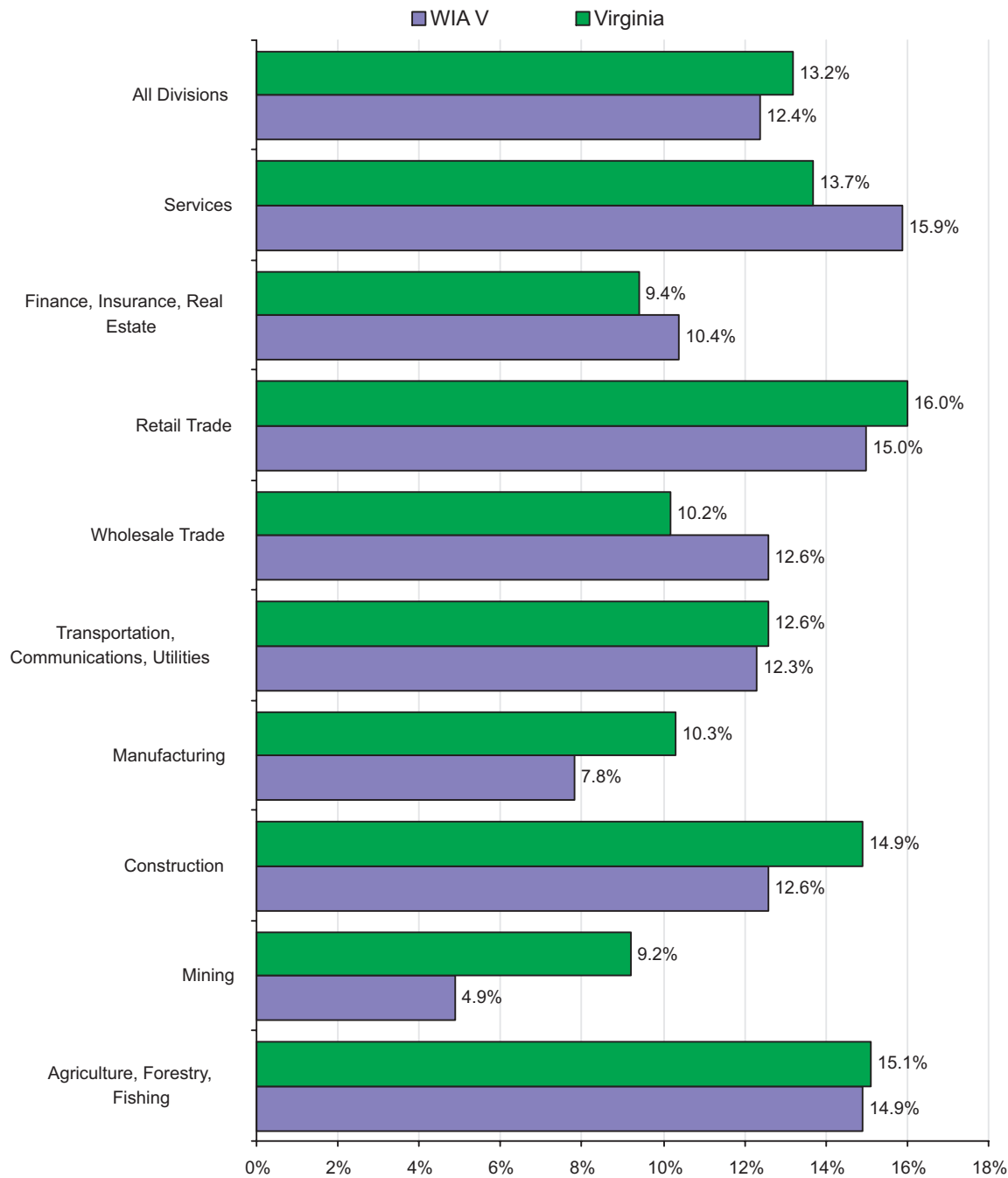
Virginia

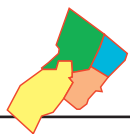


Total: 541,323

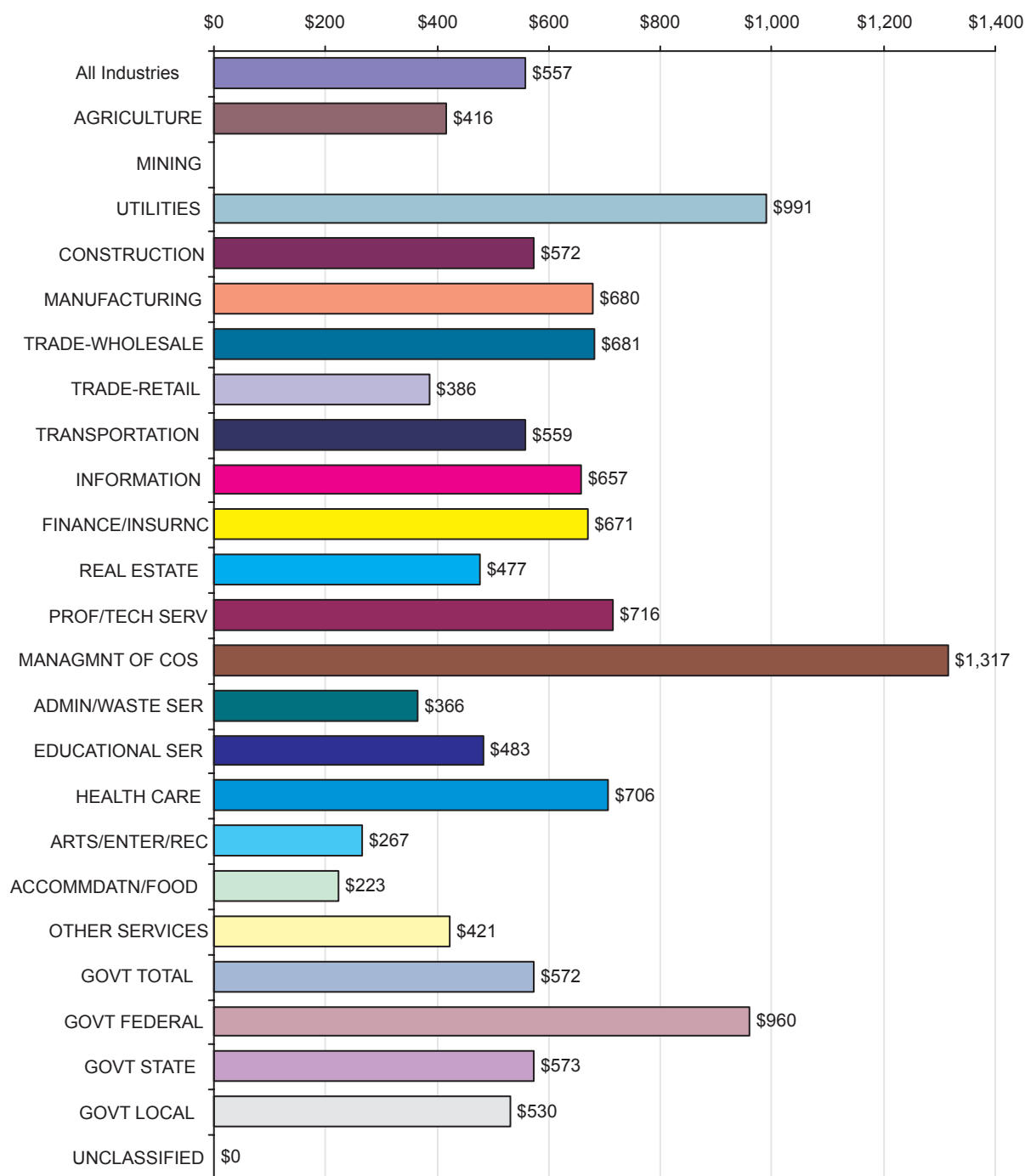


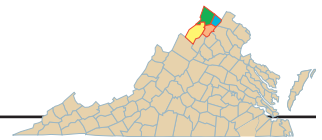
Turnover by Industry





Average Weekly Wage by Industry

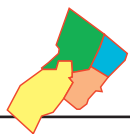




Age of Workers by Industry

■ WIA V
 ■ Virginia

	14 - 18	19 - 21	22 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 99	14 - 99
Total Employment	2,986	4,129	4,157	13,965	17,358	14,492	7,556	2,453	67,095
	106,356	162,652	180,601	659,050	739,013	576,728	282,064	81,995	2,788,457
Agriculture, Forestry, and Fishing	65	75	81	241	311	225	122	85	1,203
	2,219	3,048	3,158	9,842	9,481	6,372	2,705	1,600	38,424
Mining	0	10	9	60	75	81	46	13	295
	22	221	366	1,702	2,803	3,498	1,129	136	9,876
Construction	90	252	300	1,057	1,411	936	474	153	4,672
	3,907	10,799	13,521	50,770	61,204	41,178	18,359	6,009	205,745
Manufacturing	153	554	878	3,848	5,502	4,667	2,303	393	18,296
	2,142	9,334	14,693	72,949	106,504	94,364	46,938	7,579	354,504
Transportation, Communications, and Utilities	29	98	111	560	753	680	321	90	2,642
	1,059	4,542	8,097	42,450	52,051	40,960	16,851	3,199	169,208
Wholesale Trade	73	133	179	728	910	755	422	181	3,382
	1,691	4,449	6,486	33,407	43,317	32,948	15,708	4,557	142,564
Retail Trade	1,826	1,715	1,213	2,844	3,003	2,306	1,335	578	14,820
	67,335	76,880	57,338	136,252	130,099	94,331	48,135	20,155	630,522
Finance, Insurance, and Real Estate	32	115	121	350	466	435	282	100	1,899
	1,775	7,281	13,158	53,760	56,683	42,503	20,070	5,079	200,308
Services	719	1,178	1,265	4,279	4,929	4,407	2,252	860	19,889
	26,206	46,097	63,782	257,918	276,866	220,571	112,170	33,682	1,037,291



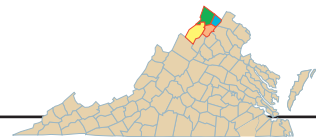
Total Employment by Industry

	Employment			Percent Change	
	Esti- mated 1998	Pro- jected 2008	Change	Total	Annual
Total All Industries	220,026	257,047	37,021	16.83%	1.57%
Agriculture, Forestry and Fishing, Total	13,900	12,807	-1,093	-7.86%	-0.82%
Mining, Total	569	504	-65	-11.42%	-1.21%
Construction, Total	12,545	13,717	1,172	9.34%	0.90%
Manufacturing, Total	55,437	56,036	599	1.08%	0.11%
Durable Goods Manufacturing, Total	19,923	19,618	-305	-1.53%	-0.15%
Nondurable Goods Manufacturing, Total	35,514	36,418	904	2.55%	0.25%
Transportation and Public Utilities, Total	10,174	10,845	671	6.60%	0.64%
Transportation, Total	6,516	7,092	576	8.84%	0.85%
Communications and Utilities, Total	3,658	3,753	95	2.60%	0.26%
Wholesale and Retail Trade, Total	46,607	55,780	9,173	19.68%	1.81%
Wholesale Trade, Total	7,697	8,193	496	6.44%	0.63%
Retail Trade, Total	38,910	47,587	8,677	22.30%	2.03%
Finance, Insurance, and Real Estate, Total	5,908	6,473	565	9.56%	0.92%
Services, Total	62,812	87,602	24,790	39.47%	3.38%
Federal Government (Except Post Office)	1,009	918	-91	-9.02%	-0.94%
State Government (Except Education and Hospitality)	3,934	4,354	420	10.68%	1.02%
Local Government (Except Education and Hospitality)	7,131	8,011	880	12.34%	1.17%

Employment by Major Occupation Group

	Employment			Openings		
	Estimated 1998	Projected 2008	% Change	Replacements	Growth	Total
Total, All Occupations	219,984	257,017	16.83%	53,580	37,033	90,680
Executive, Administrative and Managerial Occupations	13,425	15,622	16.36%	2,400	2,197	4,580
Professional Specialty Occupations	38,008	49,573	30.34%	7,580	11,565	19,210
Marketing and Sales Occupations	24,410	30,147	23.50%	7,570	5,737	13,310
Administrative Support Occupations, Clerical	28,481	32,737	14.94%	5,970	4,256	10,220
Service Occupations	30,866	38,740	25.51%	9,970	7,874	17,900
Agriculture, Forestry, and Fishing Occupations	12,875	12,202	-5.23%	3,590	-673	3,590
Precision Production, Craft and Repair Occupations	25,355	27,472	8.35%	5,920	2,117	8,000
Operators, Fabricators, and Laborers	46,564	50,524	8.50%	10,580	3,960	14,540

Source: Industry and Occupational Employment Projections, 1998 — 2008. Projection data is for the Northwest Virginia non-metropolitan region (Region 4).



Growth Occupations

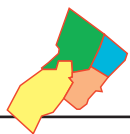
	Employment			Openings			Wages
	Estimated 1998	Projected 2008	% Change	Replacements	Growth	Total	Median Annual Wage
Telemarketers Door-to-Door Sales	554	1,182	113.36%	140	628	770	\$23,710*
Systems Analysts	523	1,038	98.47%	30	515	550	\$55,556
Computer Support Specialists	426	843	97.89%	30	417	450	\$34,710
Guards	1,276	2,267	77.66%	320	991	1,310	\$25,470
Health Diagnostics Teachers, Pstscndry	201	351	74.63%	60	150	210	\$59,170*
Sales Agents, Business	291	498	71.13%	60	207	270	\$35,260*
Computer Engineers	361	603	67.04%	20	242	260	\$62,669
Home Health Aides	567	927	63.49%	80	360	440	\$14,596
Dental Assistants	308	497	61.36%	50	189	240	\$32,319
Dental Hygienists	168	271	61.31%	40	103	140	\$62,060*
Medical Assistants	348	561	61.21%	90	213	300	\$20,527
Teachers Aides, Paraprofessional	982	1,539	56.72%	110	557	670	\$18,860*
Teachers, Special Education	635	995	56.69%	50	360	410	\$36,720
Residential Counselors	236	352	49.15%	50	116	170	\$21,570*
Teachers Aides & Educational Assts	490	719	46.73%	60	229	290	\$17,306
Computer Programmers	412	603	46.36%	130	191	320	\$48,493
Teachers, Secondary School	2,509	3,604	43.64%	800	1,095	1,900	\$40,470
Data Entry Keyers, Ex Composing	350	501	43.14%	30	151	180	\$21,280*
Adjustment Clerks	676	959	41.86%	40	283	320	\$25,007
Counselors, Vocational Education	297	417	40.40%	70	120	190	\$39,437

Declining Occupations

	Employment			Openings		
	Estimated 1998	Projected 2008	% Change	Replacements	Growth	Total
Sewing Machine Oprs, Garment	1,548	986	-36.60%	210	-562	210
Child Care Workers, Private	157	105	-33.12%	70	-52	70
Pressing Madchine Oprs/Tndrs, Textiles	179	137	-23.46%	30	-42	30
Textile Machine Oprs/Tndrs	1,232	964	-21.75%	210	-268	210
Machine Tool Cutting Oprs, M/P	131	106	-19.08%	30	-25	30
Supervisors, Farm Workers	219	184	-15.98%	20	-35	20
Farm Equipment Operators	2,899	2,579	-11.04%	890	-320	890
Cleaners & Servants, Private	338	301	-10.95%	70	-37	70
Production Inspectors, Graders	1,145	1,031	-9.96%	260	-114	260
Machine Forming Operators, M/P	374	340	-9.09%	90	-34	90

Source: Industry and Occupational Employment Projections, 1998 — 2008. Projection data is for the Northwest Virginia Non-Metropolitan region (Region 4). Wage data is for WIA V.

* These figures reflect the median annual wage for Virginia. Wage data for these occupations in WIA V were not available.

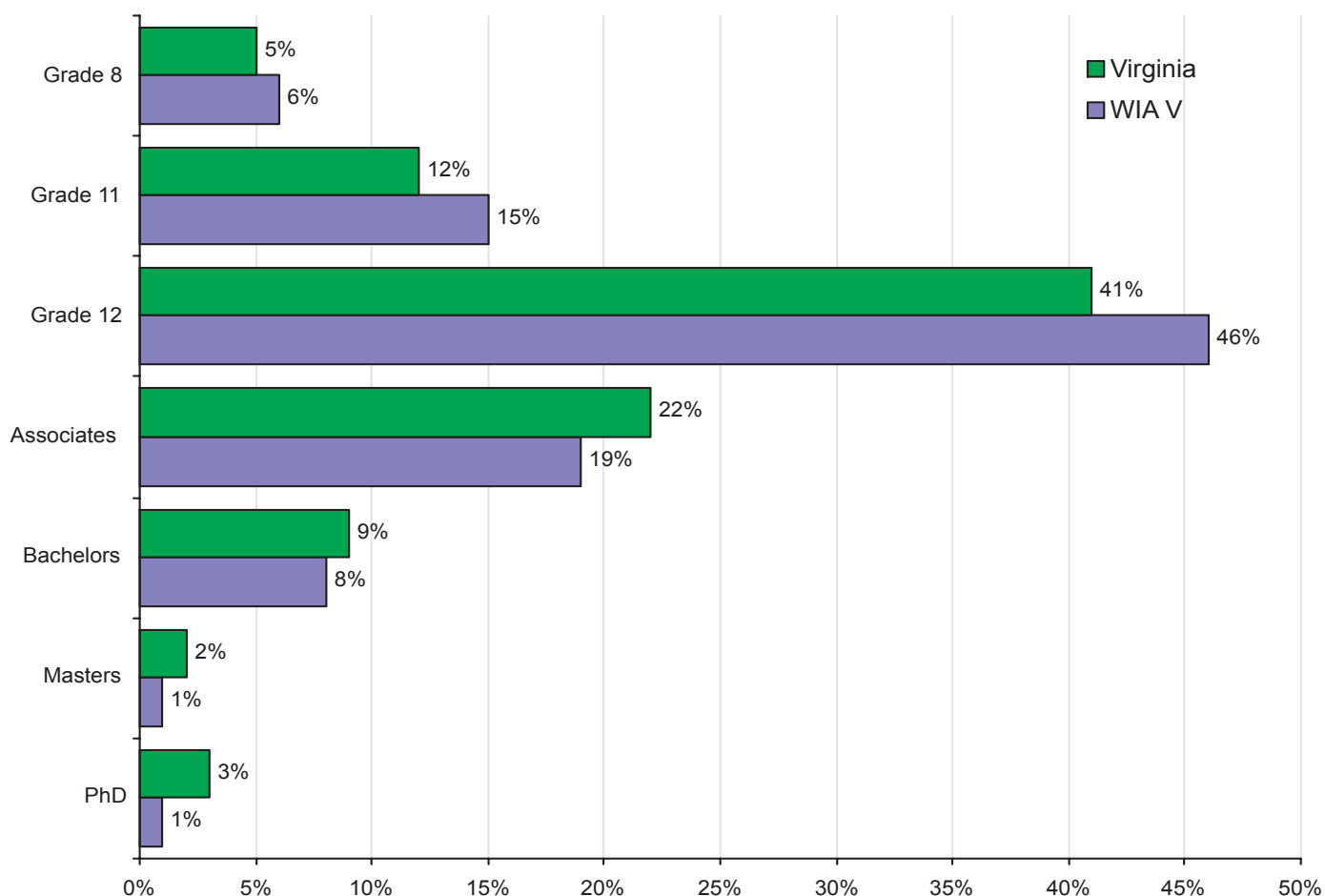


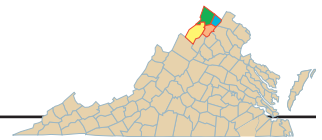
Characteristics of the Unemployed

Marketing the local labor force to new or expanding companies requires information about potential employees that would be available for immediate hire. Monthly data, collected as unemployed individuals apply for unemployment insurance benefits, provide information on various characteristics of the unemployed claimants. Demographic characteristics are recorded for age, race, sex, and education level. In addition, the industry of last employment and the occupation held in the most recent job is also part of the information collected when applicants register for unemployment insurance benefits.

As seen in the chart below, 46% of the unemployed claimants in Northern Shenandoah Valley have a grade 12 education level, as compared to only 41% of claimants statewide. On the other hand, at the level of Associates degree and higher, Northern Shenandoah Valley has a smaller percentage of claimants relative to the state. While Northern Shenandoah Valley has 919 unemployed claimants with at least an Associates degree, some of the other regions of the state have a higher ratio of claimants with post-secondary education.

Unemployed Claimants by Education Level





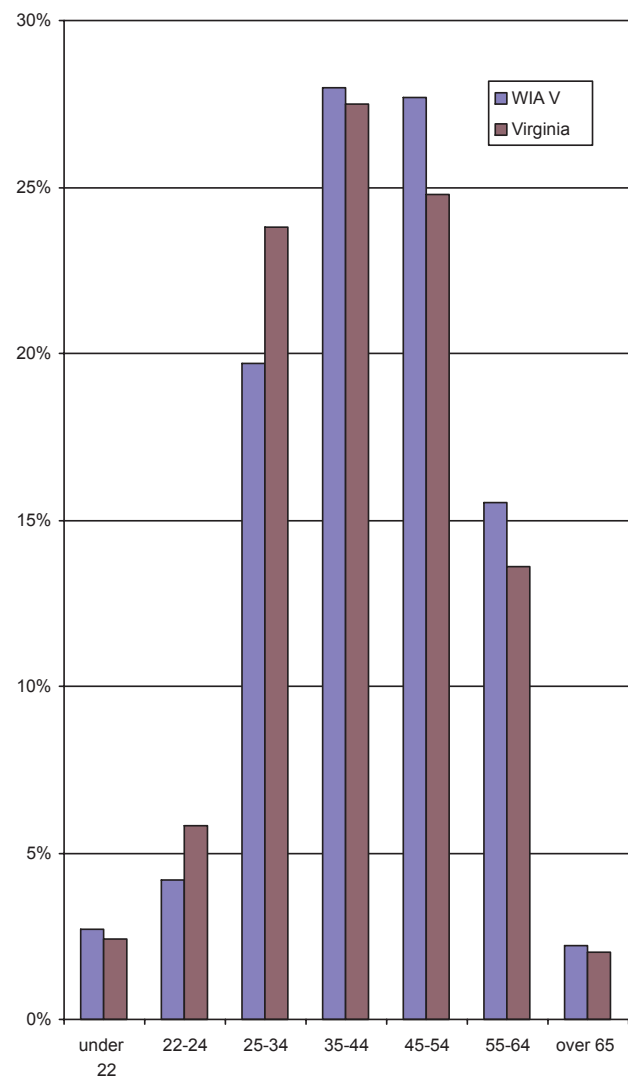
Characteristics of the Unemployed

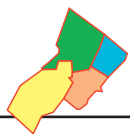
Production workers comprise the largest category of unemployed beneficiaries in Northern Shenandoah Valley, accounting for almost 20% of total claimants in February 2004. Construction and Extraction and Office and Administrative Support workers also account for a significant share of the unemployed claimants, collectively representing over 34% of the total. Employers requiring workers in these occupation categories will find an abundant supply.

Claimants by Occupation

OCCUPATION	Number of Claimants
Management	264
Business and Financial Operations	55
Computer and Mathematical	65
Architecture and Engineering	26
Life, Physical, and Social Science	7
Community and Social Services	21
Legal	21
Education, Training, and Library	32
Arts, Design, Entertainment, Sports, and Media	14
Healthcare Practitioners and Technical	38
Healthcare Support	33
Protective Service	37
Food Preparation and Serving Related	125
Building and Grounds Cleaning and Maintenance	133
Personal Care and Service	21
Sales and Related	187
Office and Administrative Support	475
Farming, Fishing, and Forestry	8
Construction and Extraction	597
Installation, Maintenance, and Repair	101
Production	601
Transportation and Material Moving	290
Military Specific	4
SOC INA	
TOTAL	3,155

Claimants by Age

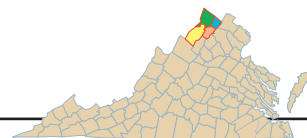




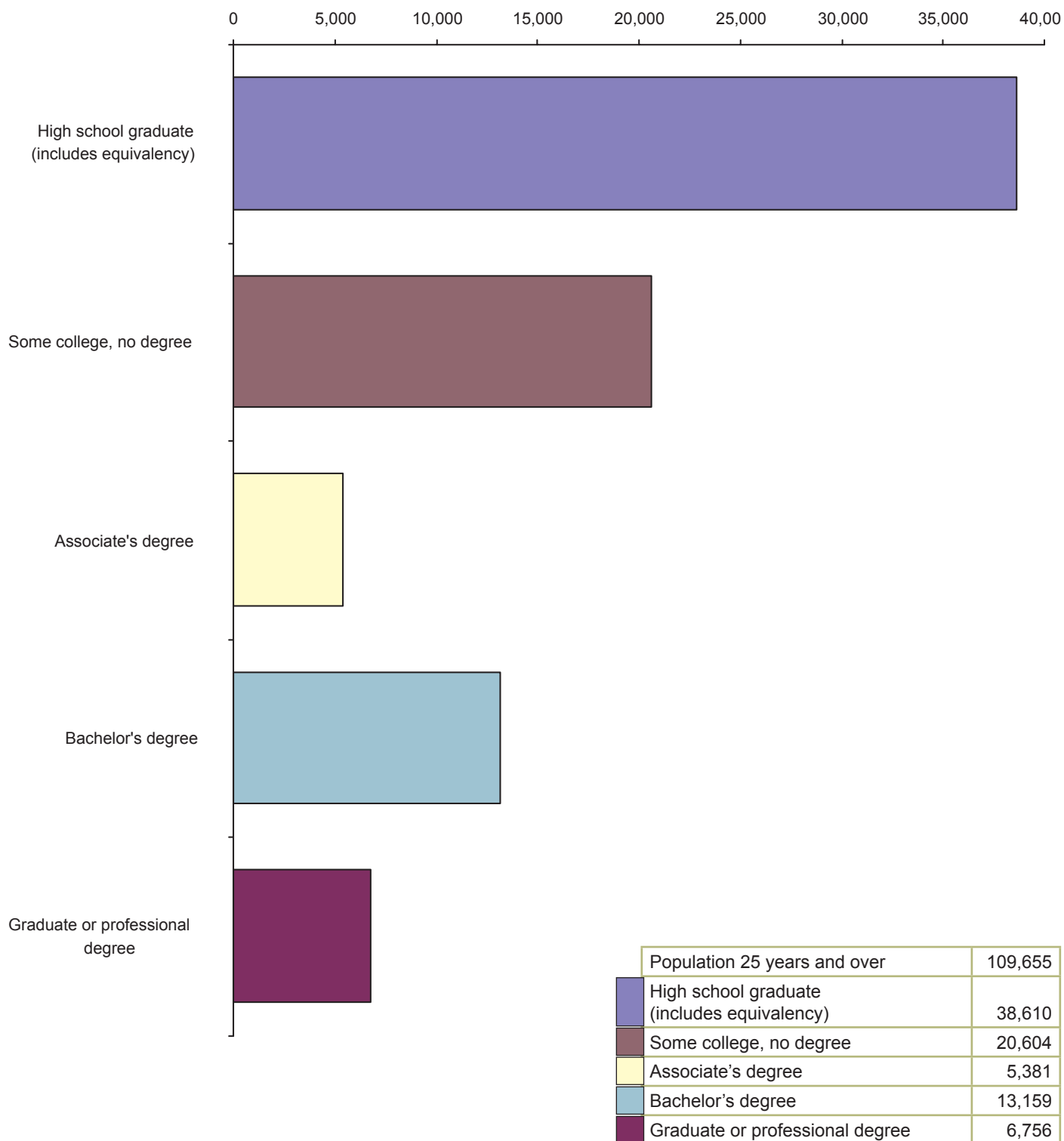
IV. Education Profile

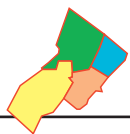
Education data describe the human capital embodied in the current labor force and provide insight into the education and training that will be required to fill the ranks of the future labor force. Some key features of the WIA V's education and training environment are as follows:

- Educational attainment at the baccalaureate level and above is low relative to the state as a whole.
- An assessment of the occupation-driven demand for local training needs indicates that between 1998 and 2008 the greatest demand for graduates from:
 - *Post-secondary vocational programs* will be in Auto Mechanic/Technician and Licensed Practical Nursing.
 - *Associate's degree programs* will be in Management Information Systems and Business Data processing, and Registered Nursing.
 - *Baccalaureate degree programs* will be in Accounting; Computer and Information Sciences; and Elementary, General, and Physical Education.
- An assessment of the occupation-driven demand for worker skills indicates that between 1998 and 2008 there will be a small increase in the skill levels required in *locating information, reading for information, and writing*.



Education Level





Occupation-Driven Training Projection

In this section we use Virginia Employment Commission's (VEC's) occupational employment projections for Region 4 –Northwest Virginia, in combination with a crosswalk developed by the National Crosswalk Service Center (NCSC) to “map” occupations into their prerequisite education and training programs. Often these are many-to-many relationships where one occupation maps into several alternative education and training programs, and one program serves as a conduit into multiple occupations. The analysis is then further refined by using a classification scheme developed by the Bureau of Labor Statistics (BLS) to “sort” occupations according to the minimum degree or award typically required for employment in that occupation. Through this combination of steps, we are able to use VEC's occupational employment projections to predict the occupation-driven demand for specific education and training programs within the Northwest Virginia Region. The method used to accomplish this task is not new and has been successfully employed in earlier studies conducted in

several states, including Virginia.

The table that follows depicts the annual occupation-driven demand for training needs in Region 4 – Northwest Virginia for the 1998 to 2008 period, as derived from this analysis. As these data show, the largest numbers of needed graduates are in auto repair (e.g., Auto/Automotive Mechanic / Technician), business (e.g., Accounting, Business Administration and Management, General Finance), computer technology (Computer and Information Sciences, Information Sciences and Systems, Management Information Systems and Data Processing), education (e.g., Elementary Teacher Education, General Education, and Physical Education Coaching and Teaching), and health (e.g., Medicine (MD), Registered Nurse, and Licensed Practical Nurse).

The National Crosswalk Service Center (NCSC) is funded by the U.S. Department of Labor, Employment and Training Administration. This crosswalk identifies the prerequisite instructional programs necessary for employment in 651 specific occupations.

The Bureau of Labor Statistics classifies occupations according to eleven education and training categories. Four of these involve on-the-job training or work experience only and the remaining seven require some level of postsecondary education (i.e., first-professional degree, doctoral degree, master's degree, bachelor's degree, associate's degree, or postsecondary vocational training). For purposes of this study, we restrict the analysis to occupations that fall within these seven education and training categories.

More formally, the demand for education and training programs is calculated as:

$$DCIP_i = \sum Dcip_{ij}$$

Where,

$$Dcip_{ij} = (SOC_j)(GCIPI_i / \sum Gcip_{ij})$$

and,

$DCIP_i$ = the annual demand for instructional program i

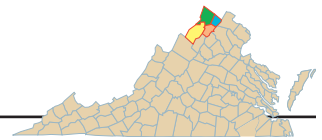
$\sum Dcip_{ij}$ = the annual demand for instructional program i across all occupation(s) j

SOC_j = the projected annual openings for occupation j

$GCIPI_i$ = Virginia graduates from instructional program i (for academic year 2000-01)

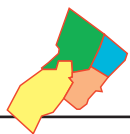
$\sum Gcip_{ij}$ = Virginia graduates from all instructional program(s) i (for academic year 2000-01) related to occupation j

Similar methods are used in at least seven states (California, Georgia, Idaho, Illinois, New Jersey, Utah, and Virginia) to project anticipated education and training demands. For an excellent exposition of this method see, William J. Drummond and Jan L. Youtie, “Occupational Employment, Demand for College Graduates, and Migration: A Statewide View,” a report to the Board of Regents, University System of Georgia, 1999. For an example of how this method has been used previously in Virginia see, A. Fletcher Mangum, “System-Wide Needs Assessment for Virginia Education,” State Council of Higher Education for Virginia, March 28, 2002, p.90.



Annual Occupation-Driven Training Needs in the Southwest and Johnson City-Kingsport-Bristol MSA, 1998 - 2008

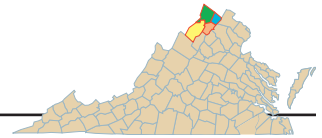
Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Accounting					34			34
Administrative Assistant / Secretarial Science, General							10	10
Agricultural Animal Husbandry and Production Management				1	1			2
Agricultural Business and Management, General				3				3
Agricultural Business / Agribusiness Operations				3				3
Agricultural Production Workers and Managers, General				1				1
Agricultural Teacher Education (Vocational)					2			2
Animal Sciences, General				7				7
Architecture					2			2
Art Teacher Education					8			8
Art, General				2				2
Audiology/Hearing Sciences			1					1
Auto / Automotive Mechanic / Technician							53	53
Automotive Engineering Tech / Technician							3	3
Barber/Hairstylist							1	1
Bilingual/Bicultural Education					3			3
Biology Teacher Education					1			1
Biology, General		3						3
Business Administration and Management, General				229	11			240
Business Computer Programming / Programmer					3			3
Business Marketing and Marketing Management				2				2
Business Systems Analysis and Design					1			1



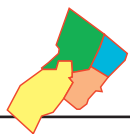
Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Business Systems Networking and Telecommunications					1	11		12
Business Teacher Education (Vocational)					2			2
Cardiovascular Tech / Technician						3		3
Chemical Engineering					4			4
Chemistry, General					4			4
Child Care and Guidance Workers and Managers, General					20			20
Child Care Provider / Assistant					9			9
Child Care Services Manager					3			3
City/Urban, Community and Regional Planning			4					4
Civil Engineering, General					6			6
College/Postsecondary Student Counseling and Personnel			1					1
Communication Disorders, General			3					3
Computer and Information Sciences, General					33			33
Computer and Information Sciences, Other					1			1
Computer Engineering					7			7
Computer Engineering Tech / Technician						2		2
Computer Installer and Repairer							1	1
Computer Maintenance Tech/ Technician							2	2
Computer Programming					8			8
Computer System Analysis					2			2
Computer Teacher Education					3			3
Cosmetic Services, General							1	1
Cosmetologist							18	18
Counselor Education Counseling and Guidance Services			16					16
Court Reporter							1	1

Education Profile

WIA V



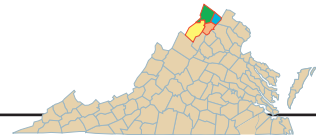
Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Dental Clinical Sciences/ Graduate Dentistry (MS, PhD)	1							1
Dental Hygienist						14		14
Dentistry (DDS, DMD)	5							5
Design and Applied Arts, Other					2			2
Design and Visual Communications					4			4
Dietetics / Human Nutritional Services					1			1
Economics, General					2			2
Education Administration and Supervision, General				12				12
Education Administration and Supervision, Other				1				1
Education of the Specific Learning Disabled					1			1
Education of the Speech Impaired					1			1
Education, General				23	136			159
Educational Supervision				1				1
Electrical and Electronic Engineering – Related Tech / Technician						2		2
Electrical and Electronics Equipment Installer and Repairer							1	1
Electrical, Electronic and Communications Engineering Tech / Technician						3		3
Electrical, Electronics and Communication Engineering					15			15
Elementary Teacher Education					83			83
Elementary, Middle and Secondary Education Administration				2				2
Emergency Medical Tech / Technician							4	4
Engineering / Industrial Management				19	1			20
English Teacher Education					11			11
Enterprise Management and Operation, General				2				2



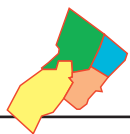
Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Farm and Ranch Management				3				3
Fashion Design and Illustration					2			2
Film/Video and Photographic Arts, Other							1	1
Finance, General				23	10			33
Financial Planning					1			1
Fine/Studio Arts				1				1
Floristry Marketing Operations					1			1
Foods and Nutrition Studies, General					1			1
Foreign Languages Teacher Education					2			2
Funeral Services and Mortuary Science						2		2
General Buying Operations					2			2
General Retailing Operations					4			4
Geology					1			1
Graphic Design, Commercial Art and Illustration				3				3
Health and Physical Education, General					2			2
Health Teacher Education					5			5
Higher Education Administration				1				1
History Teacher Education					1			1
Home Economics Teacher Education (Vocational)					1			1
Human Resources Management				6	20			26
Human Resources Management, Other					2			2
Industrial Design					1			1
Industrial/Manufacturing Engineering					3			3
Information Sciences and Systems					21	13		34
Insurance and Risk Management					1			1
Insurance Marketing Operations					8			8

Education Profile

WIA V



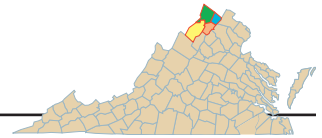
Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Interior Architecture					1			1
Interior Design					2			2
International Business				7				7
Investments and Securities				1	4			5
Junior High / Intermediate / Middle School Teacher Education					5			5
Juridical Science / Legal Specialization (LLM, MCL, JSD)	1							1
Labor/Personnel Relations and Studies				1	2			3
Law (LLB, JD)	11							11
Law and Legal Studies, Other	1							1
Library Science, Other			1					1
Library Science / Librarianship			12					12
Make-Up Artist							1	1
Management Information Systems and Business Data Processing					15	21		36
Management Science			1					1
Mathematics Teacher Education					8			8
Mechanical Engineering					11			11
Medical Administrative Assistant / Secretary							2	2
Medical Office Management							1	1
Medical Pharmacology and Pharmaceutical Sciences	1							1
Medical Records Tech / Technician						6		6
Medical Transcription							5	5
Medicine (MD)	32							32
Music Teacher Education					14			14
Nursing (R.N. Training)						98		98
Nursing Anesthetics (Post-R.N.)						1		1
Nursing Science (Post-R.N.)						5		5
Nursing, Family Practice (Post-R.N.)						1		1



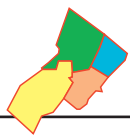
Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Nursing, Other						14		14
Occupational Therapy					6			6
Occupational Therapy Assistant						3		3
Optometry (O.D.)	1							1
Organizational Behavior Studies					4			4
Osteopathic Medicine (D.O.)	5							5
Paralegal/Legal Assistant						8		8
Parks, Recreation and Leisure Facilities Management					1			1
Parks, Recreation and Leisure Studies					1			1
Pharmacy (B. Pharm., Pharm D.)	11							11
Pharmacy, other	1							1
Photography							1	1
Physical Education Teaching and Coaching					31			31
Physical Therapy			8					8
Physical Therapy Assistant						8		8
Physician Assistant					6			6
Practical Nurse (LPN Training)							58	58
Psychiatric / Mental Health Services Technician							2	2
Psychology, General			4					4
Public Administration				17				17
Public Administration and Services, Other				1				1
Public Relations and Organizational Communications					6			6
Purchasing, Procurement and Contracts Management					16			16
Reading Teacher Education					18			18
Real Estate					8		5	13
Recreational Therapy					1			1
Respiratory Therapy Technician						7		7
School Psychology			2					2

Education Profile

WIA V



Program	First Professional	Doctoral Degree	Master's Degree	Work Experience plus degree	Bachelor's Degree	Associate's Degree	Postsecondary Vocational Training	Total
Science Teacher Education, General					4			4
Secondary Teacher Education					20			20
Social Science Teacher Education					2			2
Social Studies Teacher Education					5			5
Spanish Language Teacher Education					1			1
Special Education, General					14			14
Special Education, Other					1			1
Speech-Language Pathology			2					2
Speech-Language Pathology and Audiology			6					6
Sport and Fitness Administration/Management					1			1
Surgical / Operating Room Technician							5	5
Surveying					1			1
Taxation					2			2
Teacher Education, Specific Academic and Vocational Programs					9			9
Technical Teacher Education (Vocational)					2			2
Technology Teacher Education / Industrial Arts Teacher Ed					3			3
Trade and Industrial Teacher Education (Vocational)					3			3
Travel Services Marketing Operations							4	4
Veterinarian Assistant / Animal Health Technician						3		3
Veterinary Clinical Services (MS, PhD)	1							1
Veterinary Medicine (DVM)	4							4
Vocational Rehabilitation Counseling			1					1
Totals	75	3	62	373	743	225	186	1667



Work Skills Projection

In this section we use the VEC's occupational employment projections for Region 4 – Northwest Virginia, in combination with occupational skills profiles developed by ACT,¹ to identify the skill sets that will be required to fill projected annual job openings within the region. The skills categories addressed in this analysis are Applied Mathematics, Applied Technology, Listening, Locating Information, Observation, Reading for Information, Teamwork, and Writing. A description of each category, the skills levels associated with it, and the proportion of projected annual job openings that fall within each skill level follow.

Applied Mathematics

The *Applied Mathematics* assessment measures a person's skill in using mathematical reasoning to solve work-related problems. ACT defines the skills levels associated with this category as follows.

Level 3:

- Perform basic mathematical operations using whole numbers and decimals.
- Convert a number from one form into another using whole numbers, fractions, decimals, or percentages.
- Solve problems that are straightforward, involving a single type of mathematical operation.
- Translate easily from a verbal setup to a mathematical equation when all the information needed to solve the problem is provided in logical order and no unrelated information is included.

Level 4 (in addition to requirements for previous levels):

- Perform one or two mathematical operations using several positive or negative numbers.
- Add commonly known fractions, decimals, or percentages, or add three fractions that share a common denominator.
- Calculate averages, simple ratios, proportions, and rates, using whole numbers and decimals.

- Reorder verbal information before performing calculations.
- Determine which operations to perform and in what order.
- Read a simple chart or graph to obtain the information needed to solve a problem.

Level 5 (in addition to requirements for previous levels):

- Look up and calculate single-step conversions within English or non-English systems of measurement or between systems of measurement.
- Calculate using mixed units and several steps of logic.
- Calculate perimeters and areas of basic shapes.
- Calculate percentage discounts and markups.
- Determine what information, calculations, and unit conversions are needed to find a solution.

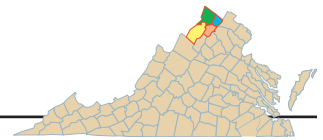
Level 6 (in addition to requirements for previous levels):

- Calculate using negative numbers, fractions, ratios, percentages, and mixed numbers.
- Calculate multiple rates for comparison or use in other calculations.
- Find basic areas and volumes of rectangular solids.
- Identify and correct errors in calculations.
- Solve problems involving considerable setup and multiple-step calculations or conversions.

Level 7 (in addition to requirements for previous levels):

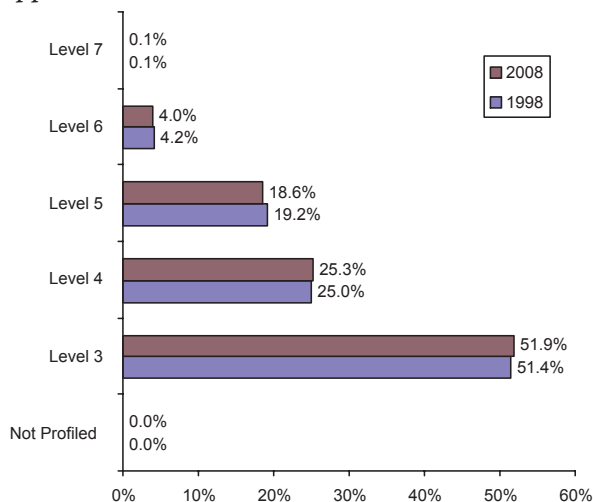
- Calculate using multiple steps of logic.
- Calculate multiple areas and the volumes of spheres, cylinders, and cones.
- Solve problems with more than one unknown.
- Solve problems involving nonlinear functions, such as rates of change.

¹ The occupational skills profiles used in this analysis were provided by ACT. ACT is an independent, non-profit organization that specializes in research and assessment related to education and work. These profiles are based on actual ACT *WorkKeys* assessments of thousands of employed individuals nationally. They represent the most comprehensive and current measure of the work skills required for specific occupations.

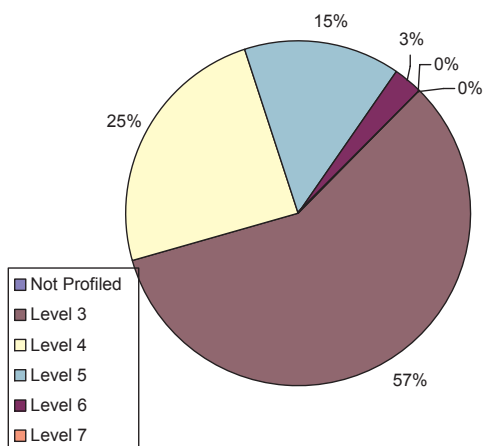


- Calculate by applying basic statistical concepts.
- Derive information needed to solve problems if incomplete or implicit information is presented.

The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Applied Mathematics* skills level, as determined by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 3 *Applied Mathematics* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Applied Mathematics



Annual Openings in Northwest Virginia by Required Skill Level – Applied Mathematics

Applied Technology

The *Applied Technology* assessment measures a

person's skill in using the basic principles of mechanics, electricity, fluid dynamics, and thermodynamics to solve problems with machines, equipment, and structures found in the workplace. ACT defines the skills levels associated with this category as follows.

Level 3:

- Understand the operation of basic hand tools, simple machine components, and uncomplicated systems, such as piping systems, simple electrical heaters, or other equipment found in the home, school, or workplace.
- Apply elementary principles underlying the operation of physical systems, such as the workings of plumbing components or simple electrical systems.

Level 4 (in addition to requirements for previous levels):

- Understand the operation of moderately complex tools, machines, and systems, such as appliances, pulley-driven equipment, or piping systems that carry more than one fluid.
- Apply elementary principles underlying the operation of physical systems, such as a block and tackle or cooling fins.

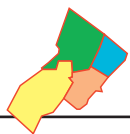
Level 5 (in addition to requirements for previous levels):

- Use the basic principles of mechanics, electricity, thermodynamics, and fluid dynamics in moderate and advanced applications.
- Understand complex machines and systems, such as the operation of gasoline engines, complex appliances, or an electrical system in a building.

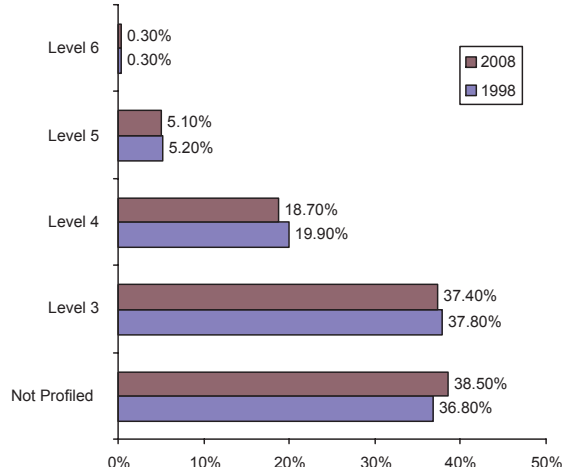
Level 6 (in addition to requirements for previous levels):

- Use principles of mechanics, electricity, thermodynamics, and fluid dynamics interacting in advanced applications such as air conditioning units.
- Troubleshoot complex systems in which a variety of mechanical, electrical, thermal, or flow faults are potential sources of difficult problems.

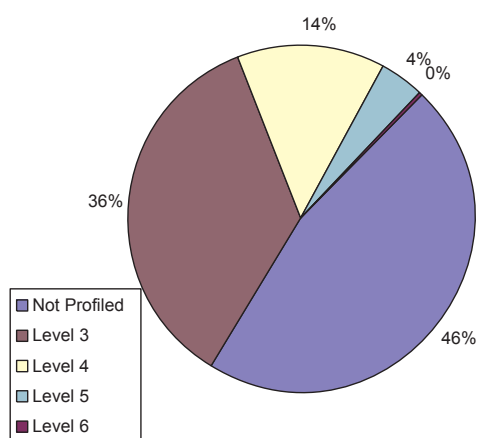
The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Applied Technology* skills level, as determined



by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 3 *Applied Technology* skills. The large “Not Profiled” proportion indicates that ACT has not profiled many of these occupations with respect to *Applied Technology* skills. As a result, it is not possible to include them in the analysis.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Applied Technology



Annual Openings in Northwest Virginia by Required Skill Level – Applied Technology

Listening

The *Listening* portion of the *Listening and Writing* assessment measures a person’s skill in listening to and conveying information. ACT defines the skills levels associated with this category as follows.

Level 1:

- Write down a small amount of useful information based on a spoken communication.
- Give clues to the gist of the situation or provide sources of further information, but do not include enough information to give the receiver a correct understanding of the situation described in the message.

Level 2 (in addition to requirements for previous levels):

- Correctly write down the basic ideas of a spoken message.
- Give a fair amount of useful information, but may miss some of the important details or incorrectly record some of the information.

Level 3 (in addition to requirements for previous levels):

- Listen to a spoken communication and record messages that are basically correct.
- Present all the primary details and the relationships among them correctly, but may miss one or two pieces of important information.

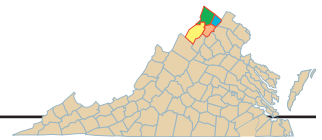
Level 4 (in addition to requirements for previous levels):

- Accurately convey the central idea of a spoken communication.
- Correctly record all the important information and the relationships among pieces of information, but may miss or incorrectly record some details or include irrelevant information.

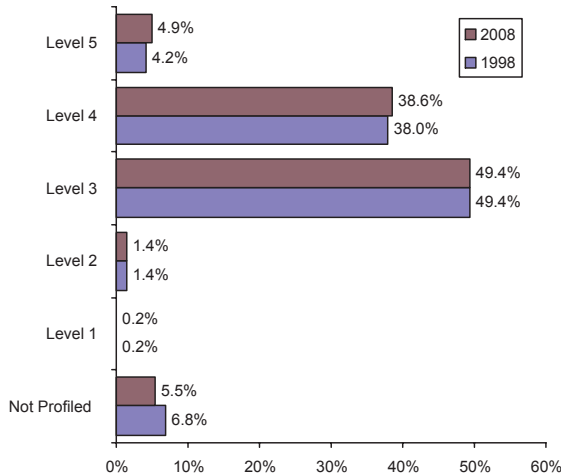
Level 5 (in addition to requirements for previous levels):

- Correctly record all the important information and the relationships among pieces of information from a spoken communication.
- Use supporting details to convey insight into the particular situation the message involves.

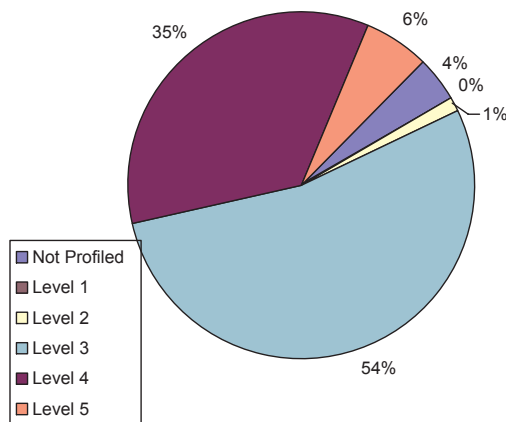
The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Listening* skills level, as determined by the ACT occupation skills profiles. The second figure provides



a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 3 and Level 4 *Listening* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Listening



Annual Openings in Northwest Virginia by Required Skill Level – Listening

Locating Information

The *Locating Information* assessment measures a person's skill in using workplace graphics such as diagrams, floor plans, tables, charts, graphs, forms, and instrument gauges. ACT defines the skills levels associated with this category as follows.

Level 3:

- Find one or two pieces of information in a graphic.

- Fill in one or two pieces of information that are missing from a graphic.

Level 4 (in addition to requirements for previous levels):

- Find several pieces of information in graphics.
- Summarize and/or compare information and trends in a single graphic.
- Summarize and/or compare information and trends among more than one graphic by determining the relationships among the graphics.

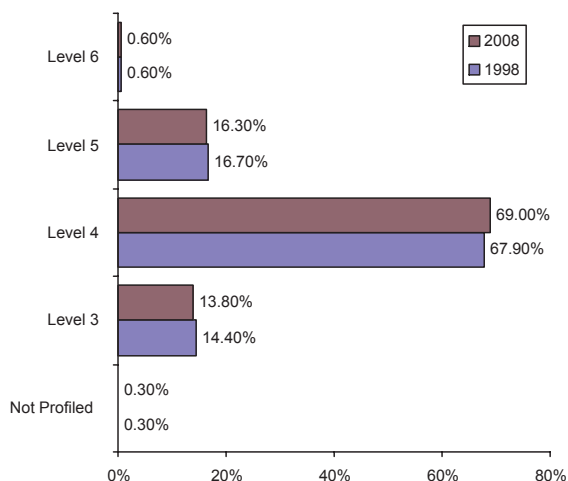
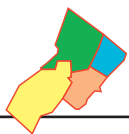
Level 5 (in addition to requirements for previous levels):

- Summarize and/or compare information and trends in a single graphic.
- Sort through distracting information to summarize and/or compare information and trends presented in more than one workplace graphic.

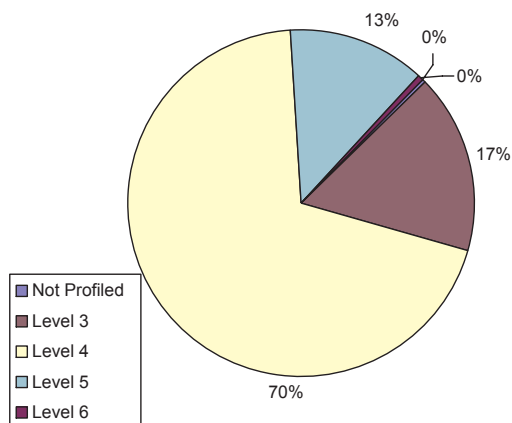
Level 6 (in addition to requirements for previous levels):

- Draw conclusions from the information presented in very detailed graphics.
- Apply information from these types of graphics to specific situations.
- Analyze data within these types of graphics to make decisions and/or predictions requiring judgments based on the information presented.

The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Locating Information* skills level, as determined by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the vast majority of jobs will require workers with Level 4 *Locating Information* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Locating Information



Annual Openings in Northwest Virginia by Required Skill Level – Locating Information

Observation

The *Observation* assessment measures a person's skill at noticing details and paying attention to instructions and demonstrations. The following is a description of the skills levels associated with this area.

Level 3:

- Pay attention.
- Watch and listen to a strongly cued demonstration or set of instructions.
- Recall a few strongly reinforced details of a process or procedure.

Level 4:

- Sustain focused attention on the demonstrated instructions, process, or procedures.
- Select and attend to important details.
- Recall a few important, moderately reinforced details about the demonstrated process or procedure.

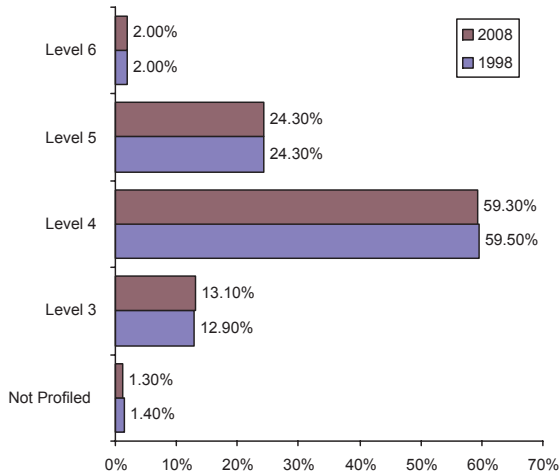
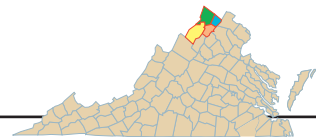
Level 5:

- Focus attention on and recall several important aspects of the information presented.
- Ignore irrelevant background information through selective attention to important details.
- Maintain attention to detail.
- Recall several important details about unfamiliar material.

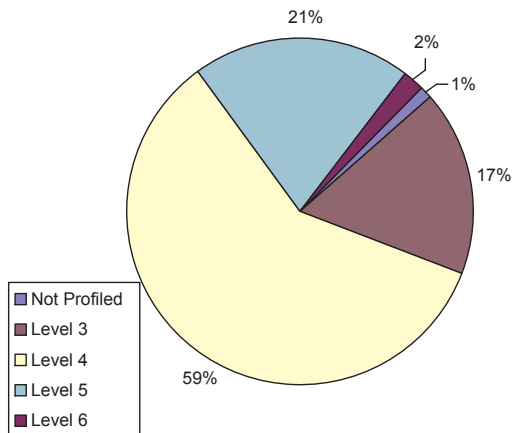
Level 6:

- Notice and remember several details that are relevant to the process or procedure being shown.
- Take in and recall incoming sensory information so it can be used to make predictions, comparisons, or evaluations.
- Visualize how a detail or task fits into the entire process or procedure demonstrated.
- Interpret if-then and cause-effect relationships.

The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Observation* skills level, as determined by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 4 *Observation* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Observation



Annual Openings in Northwest Virginia by Required Skill Level – Observation

Reading for Information

The *Reading for Information* assessment measures a person's skill in reading and using work-related information including instructions, policies, memos, bulletins, notices, letters, manuals, and governmental regulations. ACT defines the skills levels associated with this category as follows.

Level 3:

- Identify uncomplicated key concepts and simple details.
- Recognize the proper placement of a step in a sequence of events, or the proper time to perform a task.

- Identify the meaning of a word that is defined within the document.
- Identify the meaning of a simple word that is not defined within the document.
- Recognize the application of instructions given in the document to situations that are also described in the document.

Level 4:

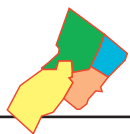
- Identify important details that are less obvious than those in Level 3.
- Recognize the application of more complex instructions, some of which involve several steps, to described situations.
- Recognize cause-effect relationships.
- Determine the meaning of words that are not defined in the document.

Level 5:

- Identify the paraphrased definition of a technical term or jargon that is defined in the document.
- Recognize the application of technical terms or jargon to stated situations.
- Recognize the definition of an acronym that is defined in the document.
- Identify the appropriate definition of a word with multiple meanings.
- Recognize the application of instructions from the document to new situations that are similar to those described in the document.
- Recognize the application of more complex instructions to described situations, including conditionals and procedures with multiple steps.

Level 6:

- Recognize the application of jargon or technical terms to new situations.
- Recognize the application of complex instructions to new situations.
- Recognize, from context, the less common meaning of a word with multiple meanings.
- Generalize from the document situations not described in the document.

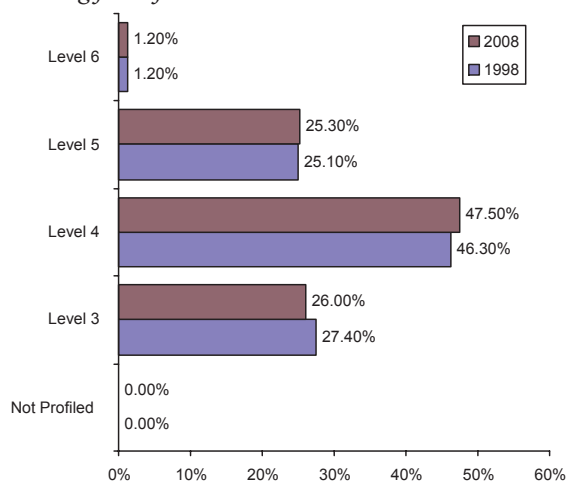


- Identify implied details.
- Explain the rationale behind a procedure, policy, or communication.
- Generalize from the document to a somewhat similar situation.

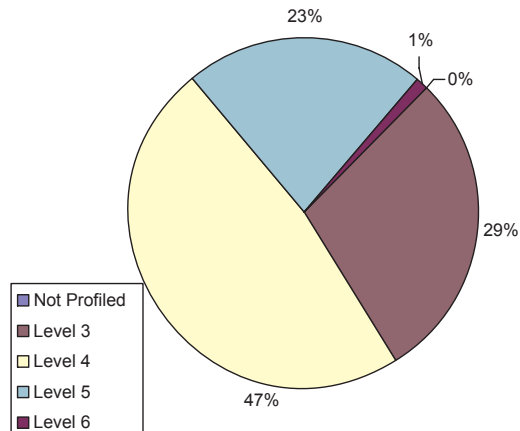
Level 7:

- Recognize the definitions of difficult, uncommon jargon or technical terms, based on the context of the reading materials.
- Figure out the general principles underlying described situations and apply them to situations neither described in nor completely similar to those in the document.

The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Reading for Information* skills level, as determined by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 4 *Reading for Information* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Reading for Information



Annual Openings in Northwest Virginia by Required Skill Level – Reading for Information

Teamwork

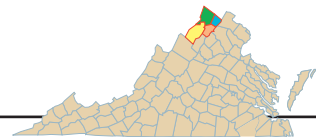
The *Teamwork* assessment measures a person's skill in choosing behaviors and/or actions that simultaneously support relationships within a team and lead toward the accomplishment of work tasks. The following is a description of the skills levels associated with this area.

Level 3:

- Identify team goals and ways to work with other team members to accomplish team goals.
- Recognize that a team is having problems finishing a task and identify the cause of those problems.
- Choose actions that actively support the ideas other team members have for accomplishing team goals.
- Recognize the need for trust and dependability in a team environment.

Level 4:

- Identify the organization of tasks and the time schedule that would help the team reach goals efficiently, creatively, and effectively.
- Select approaches that accept direction from other team members in order to complete tasks and to build and keep up good team relations.
- Identify behaviors that show appreciation for the personal and professional qualities of other team members and respect for their diversity.
- Recognize the need for commitment to quality and sensitivity to customers while pursuing the team goal.



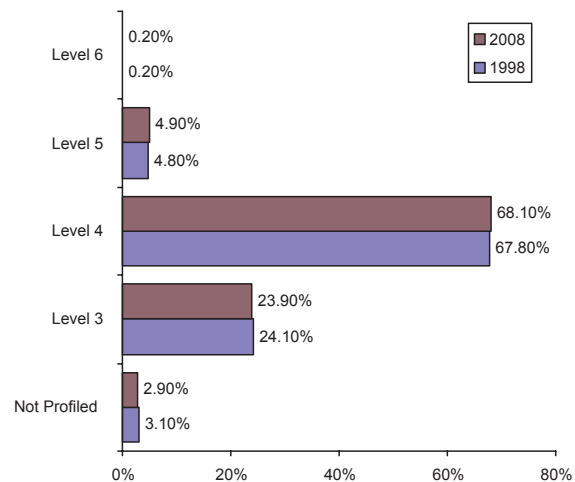
Level 5:

- Identify courses of action that give direction to other team members.
- Determine the best use of team talents to accomplish goals.
- Choose approaches that encourage other team members to improve relationships and/or complete tasks.
- Consider and evaluate the possible effects of alternative behaviors on both team relationships and the completion of tasks.

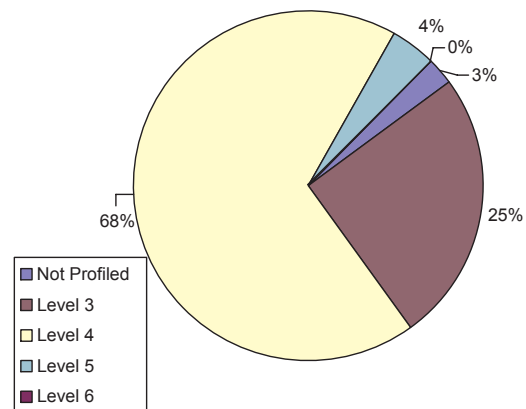
Level 6:

- Identify the focus of team activity and select a new focus if that would help the team meet its goals more effectively.
- Select approaches that show a willingness to give and take direction, as needed, to further team goals (e.g., recognize the organization of team members' tasks that would best serve the larger goals of the team).
- Choose approaches that encourage a team to act as a unit and reach agreement when discussing specific issues.
- Identify actions that would help manage differences of opinion between team members, moving the team toward its goals while valuing and supporting individual diversity.

The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Teamwork* skills level, as determined by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 4 *Teamwork* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Teamwork



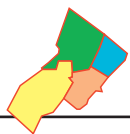
Annual Openings in Northwest Virginia by Required Skill Level – Teamwork

Writing

The *Writing* portion of the *Listening and Writing* assessment measures a person's skill in writing work-related messages. ACT defines the skills levels associated with this category as follows.

Level 1:

- Write messages in English that contain a large number of major grammatical, punctuation, spelling, and/or other mechanical errors making the messages very unclear and inconsistent with standard business English.



Level 2:

- Write messages that are generally understandable, but contain many errors in grammar, punctuation, and/or sentence structure making these messages somewhat difficult to comprehend.

Level 3:

- Write messages that are clear, but may include some incomplete sentences and/or errors in grammar and punctuation.

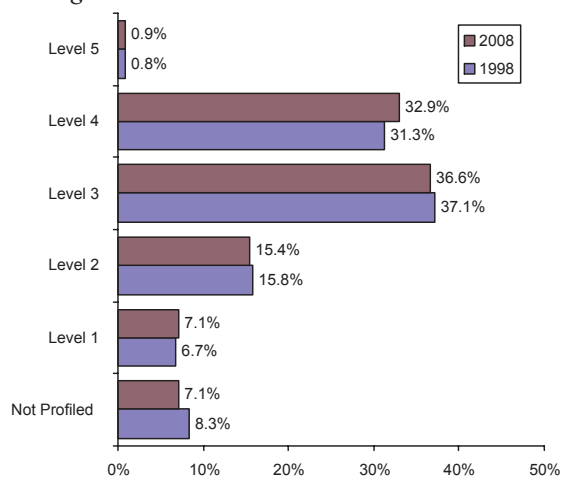
Level 4:

- Write messages that are clear and generally consistent with standard business English, but may contain a few minor errors in grammar and punctuation, and/or the writing style may lack clear organization and appropriate transitions.

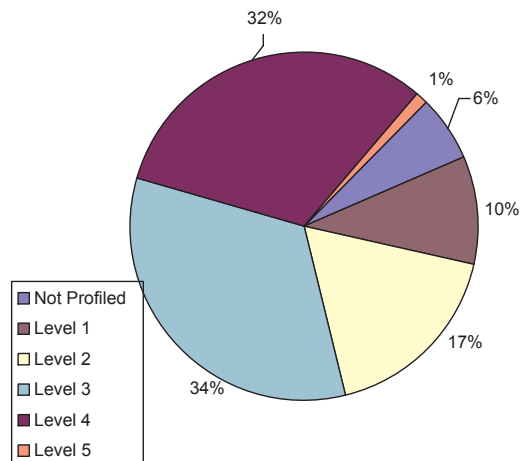
Level 5:

- Write messages that are clear and highly consistent with standard business English.
- Use good sentence structure with a smooth, logical style and no mechanical errors.

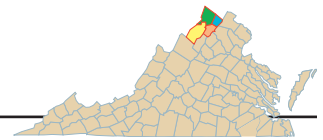
The following figure details the percentage of overall jobs in Region 4 – Northwest Virginia in 1998 and 2008 by required *Writing* skills level, as determined by the ACT occupation skills profiles. The second figure provides a similar breakdown for projected annual job openings between 1998 and 2008. These data show that the majority of jobs will require workers with Level 3 and Level 4 *Writing* skills.



Proportion of Jobs in Northwest Virginia by Required Skill Level – Writing



Annual Openings in Northwest Virginia by Required Skill Level – Writing



Graduate Data

As a compliment to the prior two sections which detailed the likely demand for skilled workers in the region, this section provides data on the current supply

of graduates within WIA V. These data reflect number of graduates, by institution, and by academic program for the 2002-2003 academic year.¹

Institution	Program (CIP Code)	Cert. <1 yr.	Cert. >1 <2 yr.	Assoc.	BA	1st Prof.	MA	PH.D.
Lord Fairfax CC	Agricultural Business and Management, General (01.0101)	0	0	7	0	0	0	0
Lord Fairfax CC	Electrical and Electronic Engin.-Related Technol./Technicians, Other (15.0399)	0	0	4	0	0	0	0
Lord Fairfax CC	Mechanical Engineering-Related Technol./Technicians, Other (15.0899)	0	1	0	0	0	0	0
Lord Fairfax CC	Engineering-Related Technol./Technicians, Other (15.9999)	0	0	13	0	0	0	0
Lord Fairfax CC	Liberal Art and Sciences, General Studies and Humanities, Other (24.0199)	0	0	227	0	0	0	0
Lord Fairfax CC	Mental Health Services, Other (51.1599)	135	0	0	0	0	0	0
Lord Fairfax CC	Surgical/Operating Room Technician (51.0909)	0	7	0	0	0	0	0
Lord Fairfax CC	Nursing (R.N. Training) (51.1601)	0	28	54	0	0	0	0
Lord Fairfax CC	Administrative Assistant/Secretarial Science, General (52.0401)	0	18	11	0	0	0	0
Lord Fairfax CC	Business, General (52.0101)	0	0	24	0	0	0	0
Lord Fairfax CC	Management Information Systems and Business Data Processing, General (52.1201)	0	0	32	0	0	0	0
Christendom College	Classics and Classical Languages and Literatures (16.1201)	0	0	0	4	0	0	0
Christendom College	French Language and Literature (16.0901)	0	0	0	1	0	0	0
Christendom College	English Literature (British and Commonwealth) (23.0801)	0	0	0	13	0	0	0

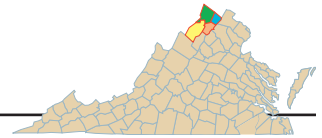
¹ Source: State Council of Higher Education for Virginia, Research Report C1, Completion Summary. Where data for 2002-2003 were not available, 2001-2002 data have been used.



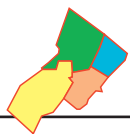
Institution	Program (CIP Code)	Cert. <1 yr.	Cert. >1 <2 yr.	Assoc.	BA	1st Prof.	MA	PH.D.
Christendom College	Liberal Arts and Sciences/Liberal Studies (24.0101)	0	0	3	0	0	0	0
Christendom College	Philosophy (38.0101)	0	0	0	14	0	0	0
Christendom College	Theological Studies and Religious Vocations, Other (39.9999)	0	0	0	11	0	0	0
Christendom College	Theology/Theological Studies (39.0601)	0	0	0	0	0	14	0
Christendom College	History, General (45.0801)	0	0	0	15	0	0	0
Christendom College	Political Science, General (45.1001)	0	0	0	16	0	0	0
Shenandoah Univ.	Environmental Science/Studies (03.0102)	0	0	0	6	0	0	0
Shenandoah Univ.	Communications, General (09.0101)	0	0	0	7	0	0	0
Shenandoah Univ.	Information Sciences and Systems (11.0401)	0	0	0	0	0	0	0
Shenandoah Univ.	Education, General (13.0101)	0	0	0	0	0	80	0
Shenandoah Univ.	Educational Psychology (13.0802)	0	0	0	1	0	0	0
Shenandoah Univ.	Teaching English as a Second Language/Foreign Language (13.1401)	1	0	0	0	0	0	0
Shenandoah Univ.	Physical Education Teaching and Coaching (13.1314)	0	0	0	12	0	0	0
Shenandoah Univ.	Computer Teacher Education (13.1321)	0	0	0	0	0	19	0
Shenandoah Univ.	Spanish Language and Literature (16.0905)	0	0	0	1	0	0	0
Shenandoah Univ.	English Language and Literature, General (23.0101)	0	0	0	4	0	0	0
Shenandoah Univ.	Liberal Arts and Sciences/Liberal Studies (24.0101)	0	0	0	4	0	0	0
Shenandoah Univ.	Biology, General (26.0101)	0	0	0	8	0	0	0
Shenandoah Univ.	Mathematics (27.0101)	0	0	0	2	0	0	0
Shenandoah Univ.	Religion/Religious Studies (38.0201)	0	0	0	1	0	0	0
Shenandoah Univ.	Chemistry, General (40.0501)	0	0	0	3	0	0	0
Shenandoah Univ.	Psychology, General (42.0101)	0	0	0	11	0	0	0

Education Profile

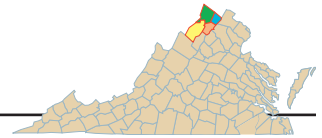
WIA V



Institution	Program (CIP Code)	Cert. <1 yr.	Cert. >1 <2 yr.	Assoc.	BA	1st Prof.	MA	PH.D.
Shenandoah Univ.	Criminal Justice/Law Enforcement Administration (43.0103)	0	0	0	3	0	0	0
Shenandoah Univ.	Public Administration (44.0401)	0	0	0	3	0	0	0
Shenandoah Univ.	Sociology (45.1101)	0	0	0	2	0	0	0
Shenandoah Univ.	History, General (45.0801)	0	0	0	3	0	0	0
Shenandoah Univ.	Dance (50.0301)	0	0	0	6	0	0	0
Shenandoah Univ.	Dramatic/Theater Arts and Stagecraft, Other (50.0599)	0	0	0	5	0	0	0
Shenandoah Univ.	Drama/Theater Arts, General (50.0501)	0	0	0	32	0	0	0
Shenandoah Univ.	Arts Management (50.0704)	0	0	0	6	0	0	0
Shenandoah Univ.	Music, General (50.0901)	0	0	0	2	0	0	0
Shenandoah Univ.	Music Conducting (50.0906)	0	0	0	0	0	1	0
Shenandoah Univ.	Music - Piano and Organ Performance (50.0907)	0	0	0	1	0	1	0
Shenandoah Univ.	Music Theory and Composition (50.0904)	0	0	0	1	0	1	0
Shenandoah Univ.	Music, Other (50.0999)	0	0	0	7	0	7	0
Shenandoah Univ.	Health System/Health Services Administration (51.0701)	0	1	0	0	0	0	0
Shenandoah Univ.	Respiratory Therapy Technician (51.0908)	0	0	1	2	0	0	0
Shenandoah Univ.	Music Therapy (51.2305)	0	1	0	7	0	1	0
Shenandoah Univ.	Occupational Therapy (51.2306)	0	0	0	0	0	20	0
Shenandoah Univ.	Physical Therapy (51.2308)	0	0	0	0	0	27	0
Shenandoah Univ.	Nursing (R.N. Training) (51.1601)	0	0	0	10	0	0	0
Shenandoah Univ.	Pharmacy (B. Pharm., Pharm.D.) (51.2001)	0	0	0	0	94	0	0
Shenandoah Univ.	Nursing, Other (51.1699)	0	0	0	0	0	11	0
Shenandoah Univ.	International Business (52.1101)	0	0	0	1	0	0	0
Shenandoah Univ.	Business Administration and Management, General (52.0201)	0	0	0	41	0	45	0
Shenandoah Univ.	Accounting (52.0301)	0	0	0	1	0	0	0
Shenandoah Univ.	Music Teacher Education (13.1312)	0	0	0	15	0	11	1

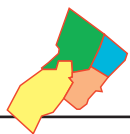


Institution	Program (CIP Code)	Cert. <1 yr.	Cert. >1 <2 yr.	Assoc.	BA	1st Prof.	MA	PH.D.
Shenandoah Univ.	Music - General Performance (50.0903)	0	0	0	18	0	13	1



WIA V Training Providers List

Provider Name	Contact Information	List of Programs/Courses
Alliance Material Handling Inc	172 Imboden Drive Unit 7 Winchester VA 22603 Phone: 540-542-6605 Email: training@alliancemat.com	OSHA Forklift Operator
BTC Enterprises Inc	3019 Siler Road PO Box 2142 Winchester VA 22604 Phone: 540-888-3100 Email: btcent@mnsinc.com Web: www.btcent.com	Computer Basics
Road Pro	76 Thunder Road Front Royal VA 22630 Phone: 540-636-9397 Email: roadpro@adelphia.net	Tractor Trailer Truck Driver
Shenandoah University	1460 University Dr. Winchester VA 22601 Phone: 540-665-4525 Email: tfitzsim@su.edu Web: www.su.edu	College Courses
Warren Memorial Hospital	1000 North Shenandoah Avenue Front Royal VA 22630 Phone: 540-636-0310 Email: klargent@valleyhealthlink.com Web: www.valleyhealthlink.com	Nurse Aide



V. Summary and Conclusions

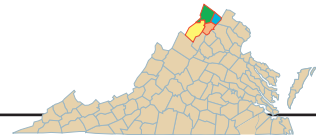
Population trends in WIA V, as in other parts of the United States, are currently dominated by the aging of the baby-boom generation. Between 2000 and 2010 this demographic phenomena will cause a major increase in the 55 and over population within the region. The net result of this increase will be a significant “graying” of the overall population.

One implication of this is that younger entry-level workers will be in short supply. This should elevate the importance of workforce services in facilitating the efficient and effective use of existing labor resources by getting younger trained workers into the workforce, and retraining or upgrading the skills of older displaced workers.

Another significant trend within WIA V has to do with relatively flat employment growth in Manufacturing (the largest employment sector in the local economy), coupled with increasing employment in Services (especially health care and education) and Retail Trade.

One implication of this shift in employment away from Manufacturing and toward Services and Retail Trade is likely to be downward pressure on wages. Whereas Manufacturing comprised the 7th highest wage sector in the local economy, Retail Trade ranks 18th and Education 14th.

Finally, it is important to note the likely effect that a shift away from Manufacturing and toward Services and Retail Trade will have on the occupation-driven demand for training and worker skills. As demonstrated in this report, it can be anticipated that employment increases in the Service sector – specifically, health care and education – are likely to account for much of the demand for trained workers between 1998 and 2008. These employment increases are also likely to place upward pressure on required worker skills in *locating information, reading for information, and writing*.



Average Weekly Wage

Clarke County

INDUSTRY SECTOR	2002 (\$)
****TOTAL****	544
AGRICULTURE	442
MINING	D
UTILITIES	D
CONSTRUCTION	653
MANUFACTURING	617
TRADE-WHOLESALE	1,563
TRADE-RETAIL	298
TRANSPORTATION	378
INFORMATION	998
FINANCE/INSURNC	D
REAL ESTATE	412
PROF/TECH SERV	768
MANAGMNT OF COS	D
ADMIN/WASTE SER	353
EDUCATIONAL SER	D
HEALTH CARE	391
ARTS/ENTER/REC	288
ACCOMMDATN/FOOD	272
OTHER SERVICES	485
GOVT TOTAL	540
GOVT FEDERAL	715
GOVT STATE	586
GOVT LOCAL	520
UNCLASSIFIED	0

Frederick County

INDUSTRY SECTOR	2002 (\$)
****TOTAL****	598
AGRICULTURE	393
MINING	D
UTILITIES	1,131
CONSTRUCTION	587
MANUFACTURING	721
TRADE-WHOLESALE	664
TRADE-RETAIL	444
TRANSPORTATION	576
INFORMATION	600
FINANCE/INSURNC	597
REAL ESTATE	517
PROF/TECH SERV	678
MANAGMNT OF COS	1,538
ADMIN/WASTE SER	387
EDUCATIONAL SER	265
HEALTH CARE	486
ARTS/ENTER/REC	271
ACCOMMDATN/FOOD	240
OTHER SERVICES	449
GOVT TOTAL	553
GOVT FEDERAL	652
GOVT STATE	509
GOVT LOCAL	556
UNCLASSIFIED	0

"D" indicates nondisclosed data.

Source: Covered Employment and Wage data, Annualized 2002.



Average Weekly Wage

Shenandoah County

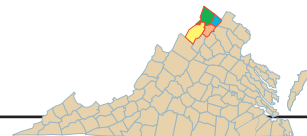
INDUSTRY SECTOR	2002 (\$)
****TOTAL****	469
AGRICULTURE	490
MINING	D
UTILITIES	777
CONSTRUCTION	458
MANUFACTURING	574
TRADE-WHOLESALE	570
TRADE-RETAIL	323
TRANSPORTATION	690
INFORMATION	583
FINANCE/INSURNC	546
REAL ESTATE	208
PROF/TECH SERV	568
MANAGMNT OF COS	D
ADMIN/WASTE SER	423
EDUCATIONAL SER	D
HEALTH CARE	476
ARTS/ENTER/REC	196
ACCOMMDATN/FOOD	197
OTHER SERVICES	354
GOVT TOTAL	508
GOVT FEDERAL	706
GOVT STATE	601
GOVT LOCAL	475
UNCLASSIFIED	0

Warren County

INDUSTRY SECTOR	2002 (\$)
****TOTAL****	505
AGRICULTURE	D
MINING	D
UTILITIES	D
CONSTRUCTION	589
MANUFACTURING	746
TRADE-WHOLESALE	713
TRADE-RETAIL	365
TRANSPORTATION	530
INFORMATION	686
FINANCE/INSURNC	512
REAL ESTATE	389
PROF/TECH SERV	768
MANAGMNT OF COS	D
ADMIN/WASTE SER	315
EDUCATIONAL SER	370
HEALTH CARE	570
ARTS/ENTER/REC	218
ACCOMMDATN/FOOD	213
OTHER SERVICES	422
GOVT TOTAL	583
GOVT FEDERAL	989
GOVT STATE	560
GOVT LOCAL	526
UNCLASSIFIED	0

"D" indicates nondisclosed data.

Source: Covered Employment and Wage data, Annualized 2002.



Average Weekly Wage

Winchester city

INDUSTRY SECTOR	2002 (\$)
****TOTAL****	596
AGRICULTURE	D
MINING	D
UTILITIES	D
CONSTRUCTION	586
MANUFACTURING	739
TRADE-WHOLESALE	680
TRADE-RETAIL	402
TRANSPORTATION	540
INFORMATION	716
FINANCE/INSURNC	910
REAL ESTATE	577
PROF/TECH SERV	763
MANAGMNT OF COS	D
ADMIN/WASTE SER	355
EDUCATIONAL SER	547
HEALTH CARE	820
ARTS/ENTER/REC	325
ACCOMMDATN/FOOD	234
OTHER SERVICES	427
GOVT TOTAL	672
GOVT FEDERAL	1,125
GOVT STATE	665
GOVT LOCAL	545
UNCLASSIFIED	0

"D" indicates nondisclosed data.

Source: Covered Employment and Wage data, Annualized 2002.



Unemployment Rate Trends

Clarke County

Year	Rate
2002	2.6
2001	1.9
2000	1.1
1999	1.5
1998	1.9

Year	Rate
1997	2.6
1996	3.0
1995	3.0
1994	2.8
1993	3.3

Frederick County

Year	Rate
2002	2.8
2001	2.5
2000	1.6
1999	2.1
1998	2.6

Year	Rate
1997	3.6
1996	4.1
1995	4.4
1994	4.4
1993	5.1

Shenandoah County

Year	Rate
2002	2.4
2001	2.1
2000	1.3
1999	2.8
1998	2.7

Year	Rate
1997	3.4
1996	5.0
1995	5.8
1994	3.6
1993	4.0

Warren County

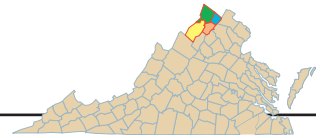
Year	Rate
2002	3.9
2001	2.8
2000	1.9
1999	2.7
1998	2.9

Year	Rate
1997	4.4
1996	5.1
1995	5.7
1994	5.8
1993	6.7

Winchester city

Year	Rate
2002	3.3
2001	3.0
2000	1.8
1999	2.5
1998	3.0

Year	Rate
1997	4.8
1996	4.6
1995	4.9
1994	5.5
1993	5.9



Population by Age

Clarke County

	1990	2000	2010	2020	2030
0-14	2,318	2,464	2,120	2,557	3,081
15-24	1,474	1,231	1,976	1,536	1,818
25-34	1,961	1,359	1,241	2,004	1,636
35-44	1,958	2,318	1,365	1,255	2,081
45-54	1,441	1,988	2,692	1,564	1,445
55+	2,949	3,292	4,805	6,485	6,538
Total	12,101	12,652	14,200	15,400	16,600

Frederick County

	1990	2000	2010	2020	2030
0-14	10,286	13,008	14,535	17,238	19,912
15-24	6,021	6,759	8,931	9,546	11,403
25-34	8,320	7,944	8,365	10,691	11,404
35-44	7,493	10,924	10,361	10,460	12,980
45-54	5,409	8,503	12,085	11,194	11,248
55+	8,194	12,071	18,024	25,172	29,153
Total	45,723	59,209	72,300	84,300	96,100

Shenandoah County

	1990	2000	2010	2020	2030
0-14	5,883	6,509	6,800	7,846	9,194
15-24	3,965	3,627	4,960	5,127	5,760
25-34	4,812	4,239	3,680	5,127	5,403
35-44	4,643	5,427	4,800	4,148	5,671
45-54	3,711	5,018	6,220	5,477	4,721
55+	8,622	10,255	12,641	15,275	16,352
Total	31,636	35,075	39,100	43,000	47,100

Warren County

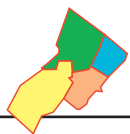
	1990	2000	2010	2020	2030
0-14	5,477	6,819	6,688	6,963	7,741
15-24	3,443	3,650	4,459	4,541	4,849
25-34	4,599	4,079	3,037	3,974	4,339
35-44	3,898	5,593	4,786	3,557	4,654
45-54	2,922	4,453	6,419	5,544	4,154
55+	5,803	6,990	10,911	16,220	19,463
Total	26,142	31,584	36,300	40,800	45,500

Winchester city

	1990	2000	2010	2020	2030
0-14	4,036	4,270	4,207	4,499	4,773
15-24	3,417	3,939	4,556	4,261	4,521
25-34	3,937	3,514	3,411	3,892	3,753
35-44	3,087	3,510	3,023	2,834	3,216
45-54	2,074	3,009	3,832	3,261	3,022
55+	5,396	5,343	6,972	8,952	10,015
Total	21,947	23,585	26,000	27,700	29,300

2010 - 2030 data are projections.

Source: Virginia Employment Commission 8/03, U.S. Census Bureau.



Employment by Industry

Clarke County

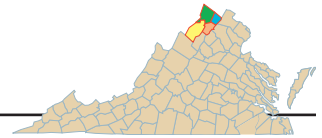
INDUSTRY SECTOR	2002
****TOTAL****	4,704
AGRICULTURE	137
MINING	D
UTILITIES	D
CONSTRUCTION	371
MANUFACTURING	1,171
TRADE-WHOLESALE	52
TRADE-RETAIL	309
TRANSPORTATION	29
INFORMATION	29
FINANCE/INSURNC	D
REAL ESTATE	43
PROF/TECH SERV	95
MANAGMNT OF COS	D
ADMIN/WASTE SER	43
EDUCATIONAL SER	D
HEALTH CARE	252
ARTS/ENTER/REC	97
ACCOMMDATN/FOOD	133
OTHER SERVICES	161
GOVT TOTAL	682
GOVT FEDERAL	34
GOVT STATE	107
GOVT LOCAL	541
UNCLASSIFIED	0

Frederick County

INDUSTRY SECTOR	2002
****TOTAL****	18,816
AGRICULTURE	207
MINING	D
UTILITIES	102
CONSTRUCTION	2,097
MANUFACTURING	4,560
TRADE-WHOLESALE	1,393
TRADE-RETAIL	1,469
TRANSPORTATION	685
INFORMATION	134
FINANCE/INSURNC	362
REAL ESTATE	110
PROF/TECH SERV	614
MANAGMNT OF COS	533
ADMIN/WASTE SER	1,000
EDUCATIONAL SER	49
HEALTH CARE	579
ARTS/ENTER/REC	269
ACCOMMDATN/FOOD	992
OTHER SERVICES	460
GOVT TOTAL	3,168
GOVT FEDERAL	60
GOVT STATE	363
GOVT LOCAL	2,746
UNCLASSIFIED	0

"D" indicates nondisclosed data.

Source: Covered Employment and Wage data, Annualized 2002.



Employment by Industry

Shenandoah County

INDUSTRY SECTOR	2002
****TOTAL****	14,390
AGRICULTURE	178
MINING	D
UTILITIES	72
CONSTRUCTION	759
MANUFACTURING	4,739
TRADE-WHOLESALE	278
TRADE-RETAIL	1,897
TRANSPORTATION	354
INFORMATION	404
FINANCE/INSURNC	279
REAL ESTATE	159
PROF/TECH SERV	180
MANAGMNT OF COS	D
ADMIN/WASTE SER	117
EDUCATIONAL SER	D
HEALTH CARE	1,038
ARTS/ENTER/REC	61
ACCOMMDATN/FOOD	1,496
OTHER SERVICES	407
GOVT TOTAL	1,875
GOVT FEDERAL	156
GOVT STATE	201
GOVT LOCAL	1,518
UNCLASSIFIED	0

Warren County

INDUSTRY SECTOR	2002
****TOTAL****	10,011
AGRICULTURE	D
MINING	D
UTILITIES	D
CONSTRUCTION	829
MANUFACTURING	913
TRADE-WHOLESALE	247
TRADE-RETAIL	1,370
TRANSPORTATION	1,127
INFORMATION	71
FINANCE/INSURNC	240
REAL ESTATE	82
PROF/TECH SERV	264
MANAGMNT OF COS	D
ADMIN/WASTE SER	153
EDUCATIONAL SER	430
HEALTH CARE	1,000
ARTS/ENTER/REC	245
ACCOMMDATN/FOOD	817
OTHER SERVICES	510
GOVT TOTAL	1,586
GOVT FEDERAL	187
GOVT STATE	78
GOVT LOCAL	1,321
UNCLASSIFIED	0

"D" indicates nondisclosed data.

Source: Covered Employment and Wage data, Annualized 2002.



Employment by Industry

Winchester city

INDUSTRY SECTOR	2002
****TOTAL****	27,966
AGRICULTURE	D
MINING	D
UTILITIES	D
CONSTRUCTION	714
MANUFACTURING	5,593
TRADE-WHOLESALE	577
TRADE-RETAIL	5,361
TRANSPORTATION	963
INFORMATION	410
FINANCE/INSURNC	503
REAL ESTATE	480
PROF/TECH SERV	679
MANAGMNT OF COS	D
ADMIN/WASTE SER	1,577
EDUCATIONAL SER	774
HEALTH CARE	5,117
ARTS/ENTER/REC	236
ACCOMMDATN/FOOD	2,248
OTHER SERVICES	707
GOVT TOTAL	1,868
GOVT FEDERAL	370
GOVT STATE	188
GOVT LOCAL	1,310
UNCLASSIFIED	0

"D" indicates nondisclosed data.

Source: Covered Employment and Wage data, Annualized 2002.